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Movie lot paradise for 20th's "Meet Me After The Show," photographed by Arthur Arling, A.S.C.

THIS MONTH •

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AUGUST
1951

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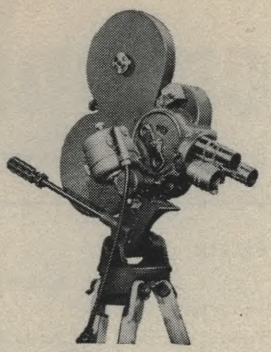

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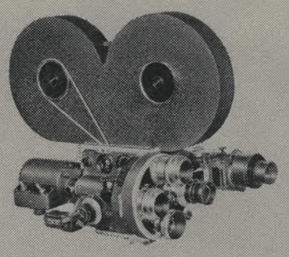

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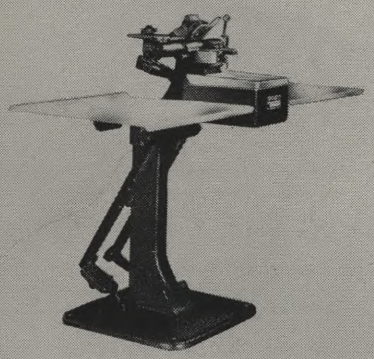

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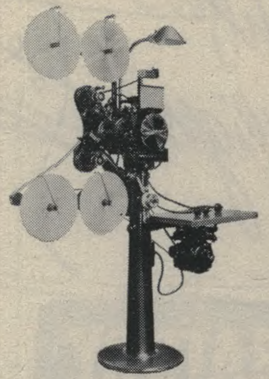

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ON THE COVER

ARTHUR ARLING, A.S.C., directs the photography for a scene for 20th Century-Fox's "Meet Me After The Show," starring Betty Grable and McDonald Carey. South seas lagoon scene was staged on lake in studio's back lot. Huge backdrop scaffolding in background is used when staging scenes on lake in miniature.

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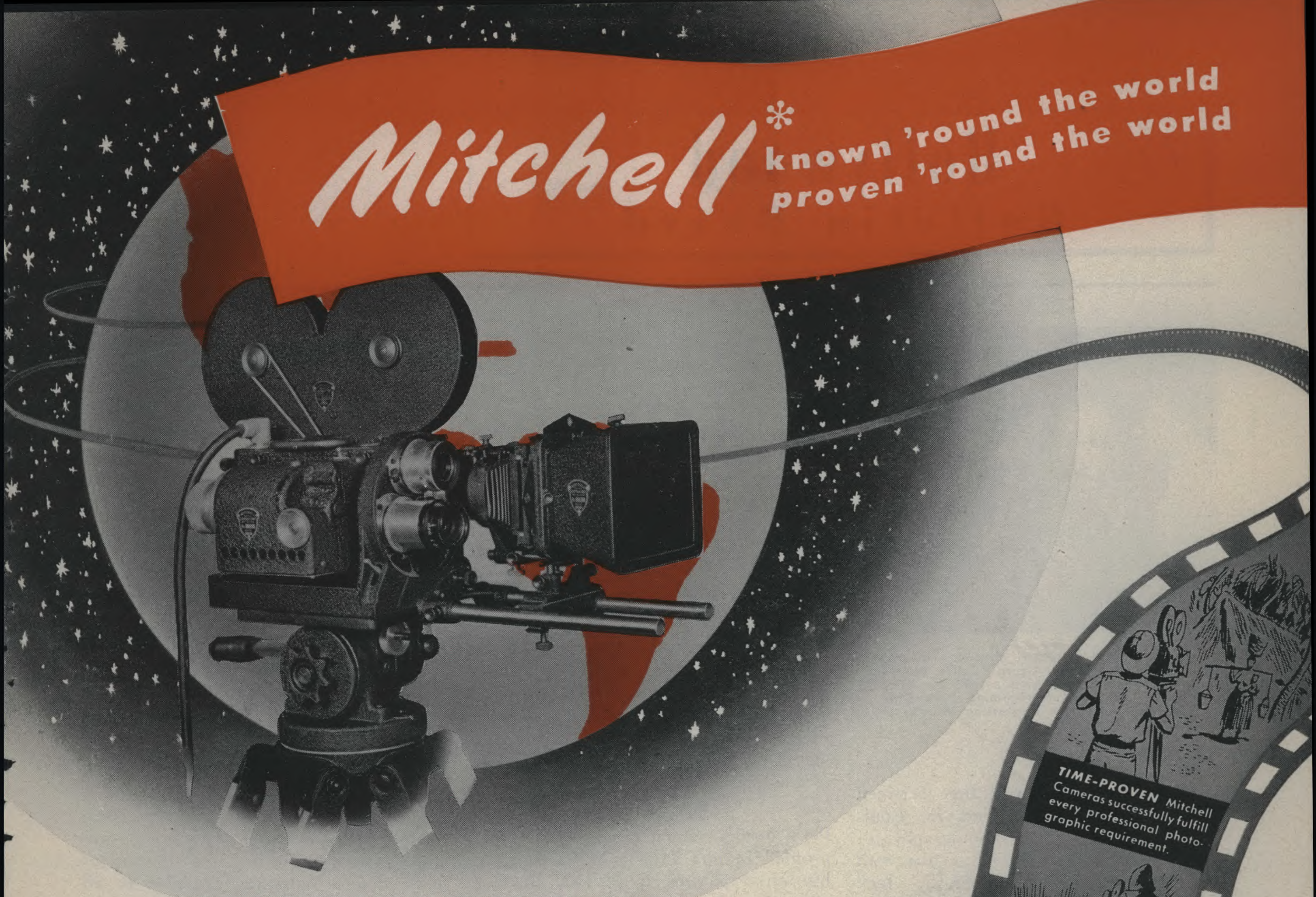

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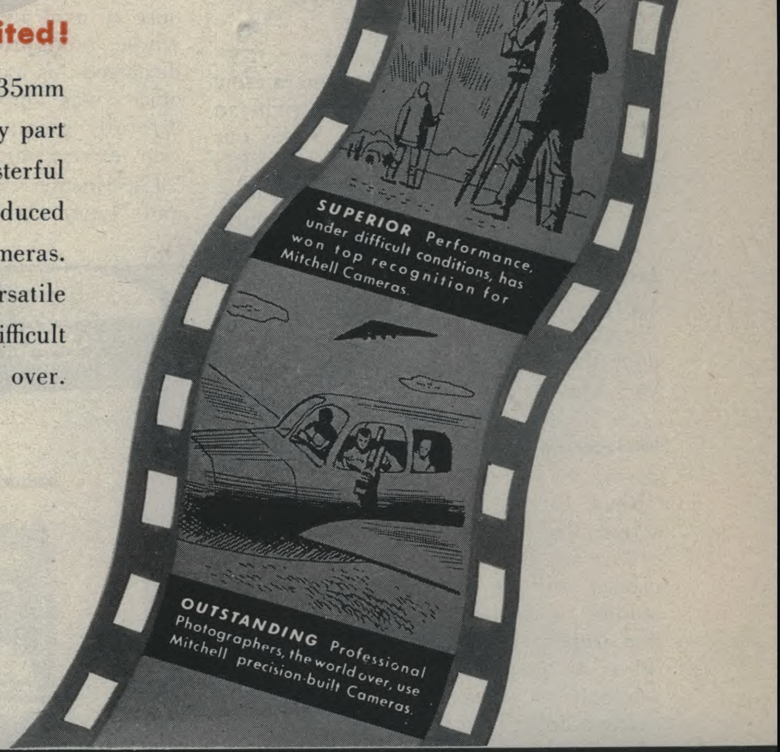
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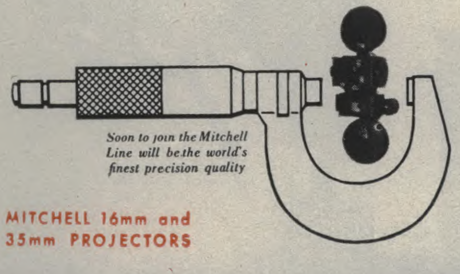

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Hollywood
Bulletin Board

CAMERAMAN Milton Krasner, A.S.C., (right) and director George Cukor discuss with pretty Jeanne Crain a take for "The Marriage Broker," forthcoming 20th Century-Fox production co-starring Miss Crain and Thelma Ritter.

Elmer Dyer, A.S.C., found time between his TV filming assignments for Louis Weiss to direct the photography of "Buffalo Bill," a wagon-train story with a western locale produced by Jack Schwartz at Eagle-Lion.

•

Ray Rennahan, A.S.C., and his camera crew doubled as volunteer firemen to fight an unscheduled forest fire that broke out while Paramount's "Denver & Rio Grande" company was shooting on location at Durango, Colorado last month.

•

Jack Russell, A.S.C., is presently in Singapore, shooting for Soundmasters, Inc. Assignment also will take him to London, Paris, Rome, Athens, Cairo, Bombay Madras and Colombo.

•

Producer-director Herb A. Lightman, preparing to direct the suspense thriller "Black Orchid" from his own original screen-play, plans a unique filming procedure for the feature. A 50-foot motor cruiser will be outfitted as a "floating studio" to accommodate lights, generator and camera equipment. Craft will also serve as quarters for production crew while at sea, as well as an "ocean-going camera dolly." Much of story is to be filmed at sea, and on shores of Mexico west coast.

•

"The North Country," MGM production mentioned in this column last month as being filmed in Technicolor, is instead being photographed in the new Ansco-MGM color process. Picture is MGM's first major production to be filmed with the new process.

•

Barton D. Keith, president of the Hollywood Hotel Company and formerly associated with Sam Hayes in the production of TV films, succeeds William Crespinel, A.S.C., as vice-president of Kinevox, Inc., following latter's disposal of interest in company to Len Roos, A.S.C., president of Kinevox.

•

Newly elected as Associate Members to the American Society of Cinematographers, are William A. Cushman and Norman F. Oakley, both of whom are executives in the Photo Products Department of E. I. DuPont de Nemours & Company, New York City.

•

David Bradley, whom Herb A. Lightman profiled in our May issue, is directing his initial picture at MGM. Bradley, once an avid amateur movie maker, and whose 16mm production of Julius Caesar displayed his talents to MGM's front office, was signed by the studio and carefully groomed for a major production directorship. His initial effort is "The Enemy," starring George Murphy and Nancy Davis.

Ernest Haller, A.S.C., leaves for India September 25th, where he will shoot three pictures for The Film Group, headed by Forrest Judd. Title of initial picture in series is "Monsoon." Two of the three pictures will be filmed in color. Assignment is Haller's first as a free-lance director of photography since terminating his long term contract with Warner Brothers Studio.

HALLER

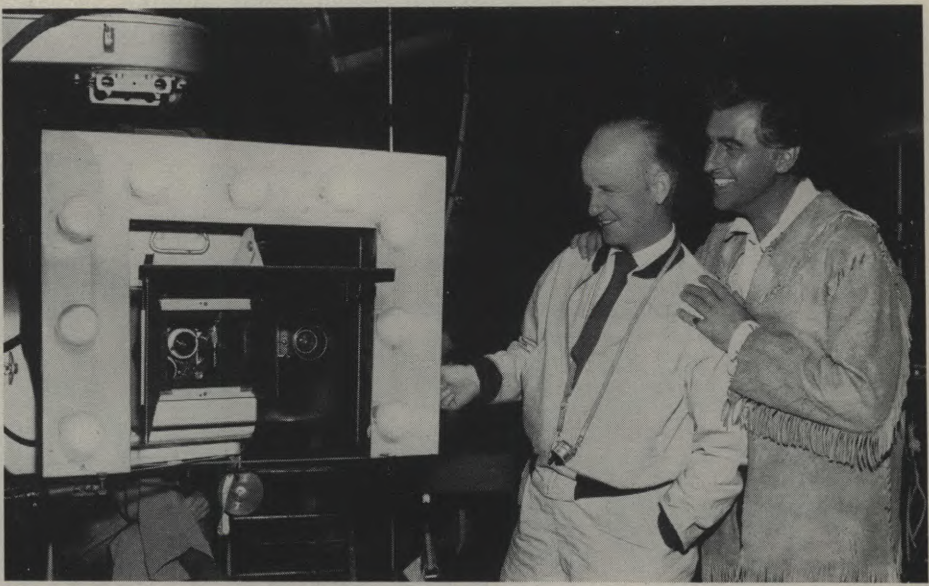
•

Fred Whitney has joined the staff of the Society of Motion Picture and Television Engineers to take charge of test film technical operations. Performance testing is essential to efficient use of motion picture films in theatres, schools and television broadcasting. Test films available from the Society are the major performance standards available to all manufacturers and users.

•

Harry Dugan, for years a top travel film maker, has his most pretentious effort todate playing on Broadway. It's an Irish travelogue, which Dugan wrote, directed and photographed over a period of two years.

(*Continued on Page 334*)



ROBERT SURTEES, A.S.C., (left) directing the photography of MGM's "The North Country," demonstrates to Stewart Granger novel fill-light unit which he developed for use with studio's new Ansco-MGM color process. U-shaped reflector holds nine blue photofloods, encircles camera lens and finder. Lights may be controlled in groups or in full assembly, are also controlled from dimmer switch.

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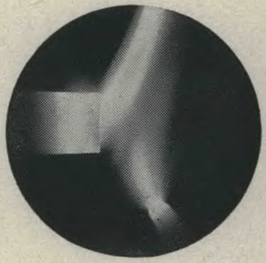

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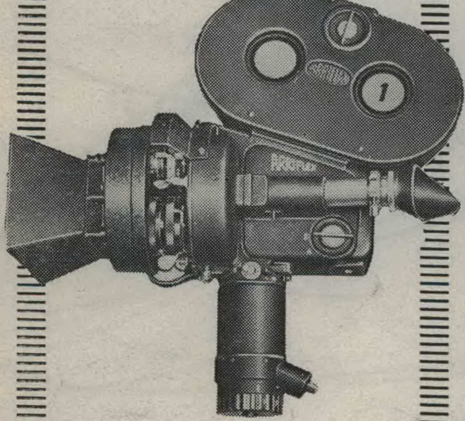

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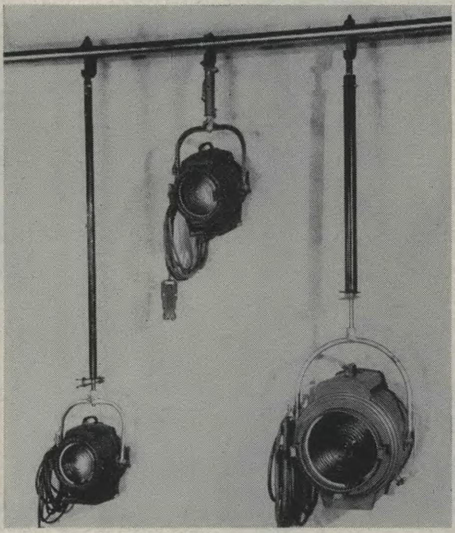
WHAT'S NEW

in equipment, accessories, service

PNEUMATIC LAMP HANGERS—J. G. McAlister, Inc., 1117 No. McCadden Pl., Hollywood, announces a new product of interest to TV stations—a pneumatic lamp hanger for mounting set illumination lamps from overhead pipe stringers. They are especially designed for use where space above pipe is limited or non-existant.



Pipe clamping device is an inverted "V" which is placed over pipe. Unit may be rigidly locked to pipe by turning the tubular shaft from lower end. Lamp may be raised or lowered by releasing positive-locking latch at lower end of tube. An air lock within tube cushions raising or lowering action of lamp unit.

Two sizes are available, as illustrated. Either will support almost all types of lamps currently in use for illumination in television studios.

•

NEW RECORDER PROJECTOR—A new 16mm recorder-projector, providing the first means of directly recording commentary or musical background magnetically on the edge of 16mm picture film, has been announced by the RCA Victor Division of Radio Corporation of America. Announcement of new machine followed development of method for applying a stripe of magnetic oxide (for sound track) one-tenth inch wide on edge of 16mm films. Striping can be placed on film either before or after film has been exposed in camera, or even if film already has an optical sound track.

Tradenamed the RCA "400" Magnetic Projector, unit was displayed at the Annual Trade Show of Audio-Visual dealers in New York recently.

•

INFRARED AND ULTRAVIOLET DATA BOOK—A completely revised edition of its Kodak Data Book, "Infrared and Ultraviolet Photography," has just been announced by Eastman Kodak Company, Rochester, N. Y.

The new edition brings up to date all available data on Kodak films and plates for infrared and ultraviolet photography and information on their most effective use in both technical and general picture taking. Numerous illustrations, charts, diagrams, and data sheets make this a valuable book for both still and motion picture photographer. Price is 35 cents per copy at Kodak dealers.

•

NEW 8MM CINE CAMERA—Bell & Howell Company announces the latest addition to its line of 8mm cine cameras—the 134-V, spool-film-loading camera with many new features, including improved exposure calculator, five speeds—16, 24, 32, 48 and 64 frames per second, and an attractive scratch-proof grey-black wrinkle finish. Weighing but one pound ten ounces, price of camera is $109.95, including Federal excise tax.

•

• **S.O.S. CINEMA SUPPLY** Corporation says no unusual engineering ability is necessary to operate the Bridgamatic

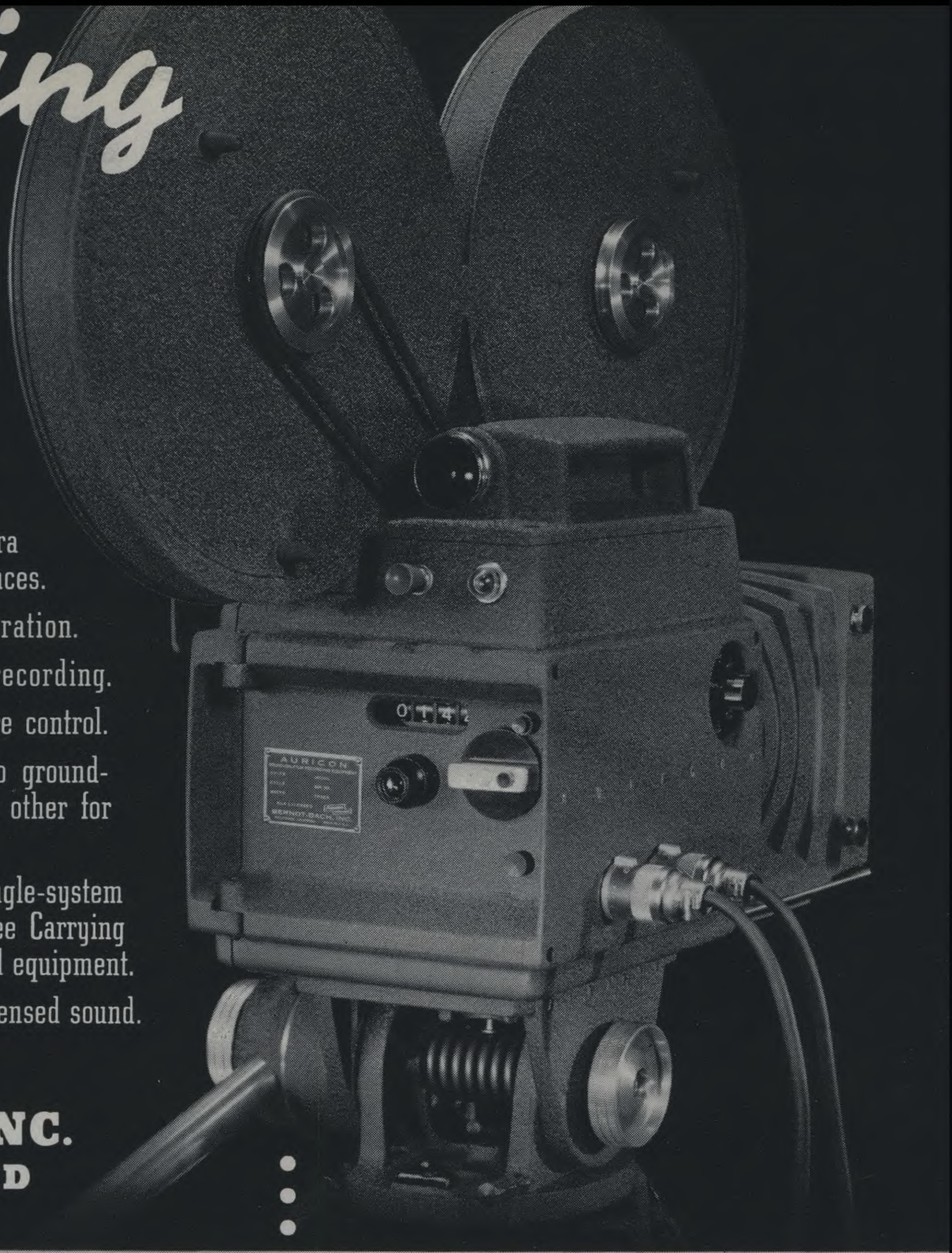
(*Continued on Page 334*)

Announcing

THE NEW AURICON

"SUPER 1200"

16MM SOUND-ON-FILM CAMERA . . . Featuring



- ★ Instant ground-glass focusing through the Camera lens, shows the exact frame and focus at all distances.
- ★ Self-blimped for completely quiet studio operation.
- ★ 1200 foot film capacity for 33 minutes of recording.
- ★ Variable shutter for fades, dissolves or exposure control.
- ★ Two independent finder systems in addition to ground-glass reflex focusing; one finder for studio use, the other for telephoto work.
- ★ $4,315.65 complete for "High Fidelity" 16mm single-system sound-on-film, with Amplifier, Microphone, and three Carrying Cases (lenses additional). Also available without sound equipment.
- ★ Sold with 30 day money-back Guarantee. RCA licensed sound. Write today for further information.

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The quiet operation of the Auricon "Super 1200" is silent proof of precision design. Its only equal as a superb photographic instrument is another Auricon "Super 1200".

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MANUFACTURERS OF SOUND-ON-FILM RECORDING EQUIPMENT SINCE 1931

THE COMPANY took advantage of naturally foggy days to shoot many of the atmospheric exteriors for "Showboat." Boat, in background, is largest movable prop ever constructed for a Hollywood motion picture.

"Showboat"—Example Of Well-planned Photography

Technicolor photography achieves new heights in pictorial excellence in MGM's greatest musical film.

By GEORGE SIDNEY

Photos by George Sidney and Eric Carpenter

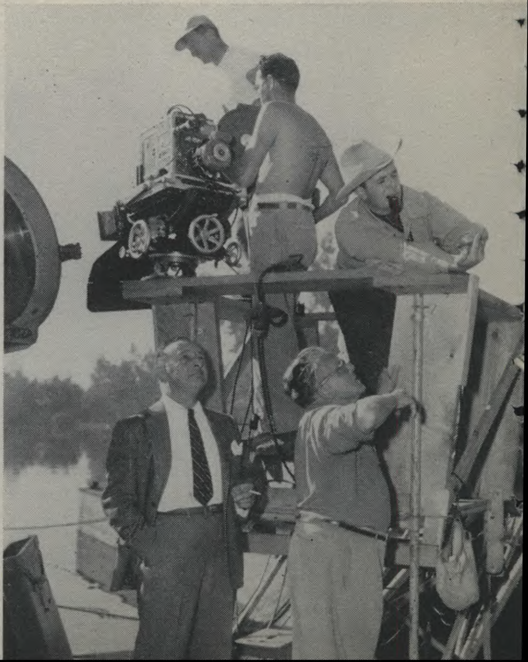
NOTE: George Sidney and Charles Rosher, A.S.C., together have made three pictures at Metro Goldwyn Mayer studio — Sidney, the youthful director with an unsatiable yen for photography and Rosher, the old master painter with a Technicolor camera who recently completed the photography of "Showboat," which Sidney directed.

In the following article, Sidney, who recently was elected president of the Screen Directors' Guild of America, tells something about the cinematography of this picture and describes some of the unique procedures employed by director of photography Rosher that have made the picture a photographic masterpiece.

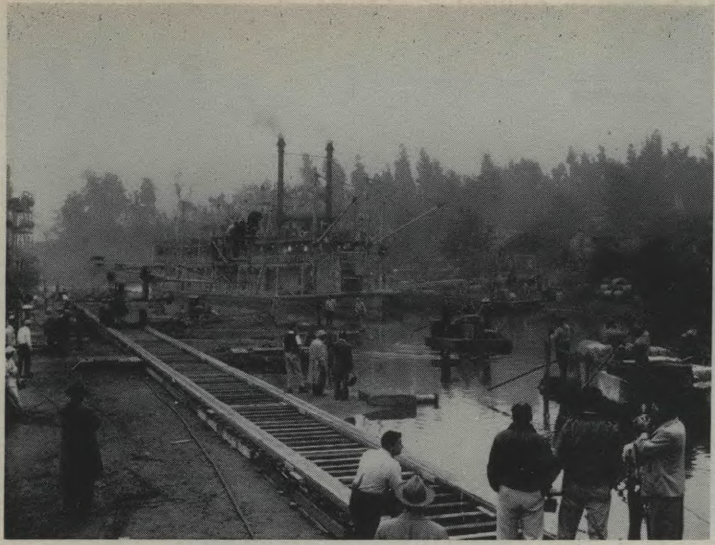
No mean photographer himself, Sidney became an avid camera fan at the age of ten, is now preparing for early publication a volume of photos which he personally shot with his Rollei camera during the filming of "Showboat."

Before starting the production, Sidney personally scouted locations for the picture along the Mississippi river, photographing likely locations and river craft with his Rollei and 16mm ciné camera. Results were screened at the studio as an aid to preparation of the "Showboat" shooting script and the art direction.

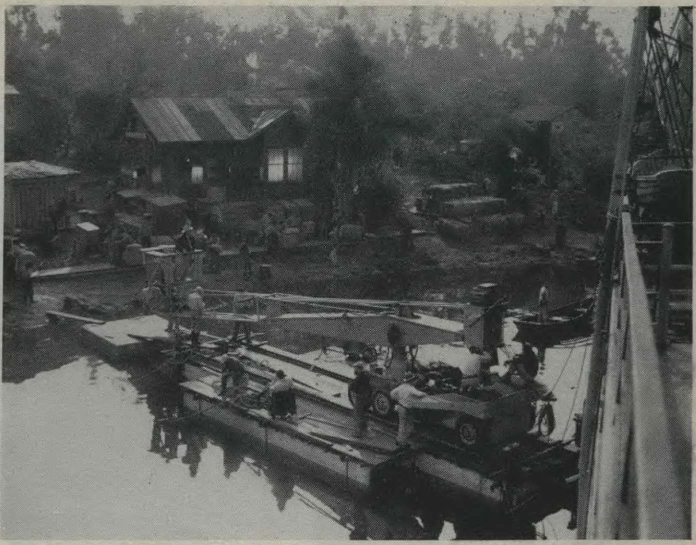
Says Sidney: "No other picture in a long time has had such color quality, such consistency of color and lighting continuity.—EDITOR.



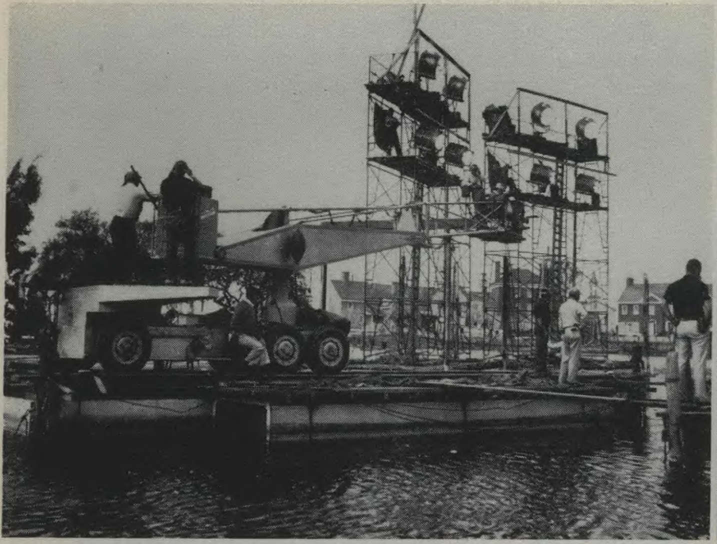
DIRECTOR George Sidney (with pipe) discusses composition of next shot with cameraman Charles Rosher, A.S.C., while producer Arthur Freed looks over assemblage of players on upper deck of the showboat "Cotton Blossom."



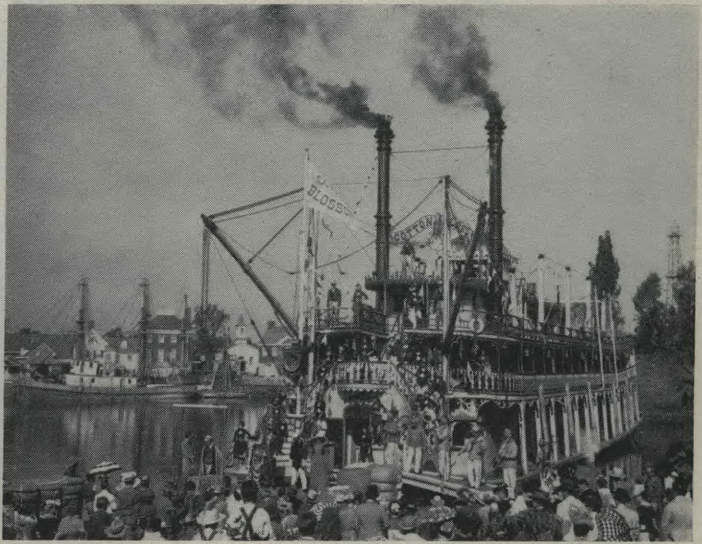
HISTORIC tree on MGM's lot three had to be removed to permit construction of lengthy dolly tracks for tracking shot. Cameraman Rosher (extreme right foreground) directs operation of crane.



HOLLYWOOD'S largest camera crane was mounted on a barge in order to make the scores of shots of action on the boat, and the many trucking shots of boat itself moving on the lake in lot three.



AUGMENTING vast lighting equipment used for exteriors were these giant arcs erected on parallels mounted on barges floating on lake. These enabled Rosher to direct "artificial sunlight" from any angle.



SHOOTING a scene for the opening of "Showboat." The Technicolor camera is at far left, out of picture, so that oil derrick, in distance is covered from camera viewpoint by tall tree at left of derrick.

THE DEGREE to which people become absorbed in a motion picture, and become subjectively involved in a kind of emotional third dimension, is the measure of a picture's success. Because motion pictures are a visual medium, a successful picture often depends on the cameraman's skill in enhancing the action pictorially, leading the audience into this emotional state.

"Showboat" is an example of this cinematographic ingenuity. Throughout its entire length, it is replete with deft cinematic touches that point up a player's role or enhance a situation with observable effect on the audience.

One example is the unobtrusive way the camera captures the moods of Howard Keel and Kathryn Grayson after they meet in the opening sequences, and follows them casually as they move about the boat, and through a number of candid closeups makes the audience feel with them the love - at - first - sight that motivates the story. It is director of photography Charles Rosher's camera artistry that leads one to feel the deep grief of Ava Gardner as she sings "Can't Help Lovin' That Man," and makes William Warfield's rendition of "Ol' Man River" the highlight of the picture critics have claimed for it.

Many unusual photographic problems were encountered in filming "Showboat." Most of them were anticipated early and plans consequently made for overcoming them in a series of preproduction huddles that took place before we started shooting. "Showboat" is the third picture in a row that Rosher and I have made together; so by now we have become pretty much of a team. He knows the kind of photographic results I like, and I know that no photographic effort is impossible for him. A photography enthusiast since I was ten, the camera has always been my most absorbing interest. Rosher, also became a photographic enthusiast at an early age. Today he is happiest when assigned to a color production permitting him opportunity to interpret the story in new pictorial accomplishments.

Those "old master" touches in many of the colorful scenes of "Showboat" were no accident. They were the end result of countless sessions when together we pored over endless volumes in my library of art and photographic books.

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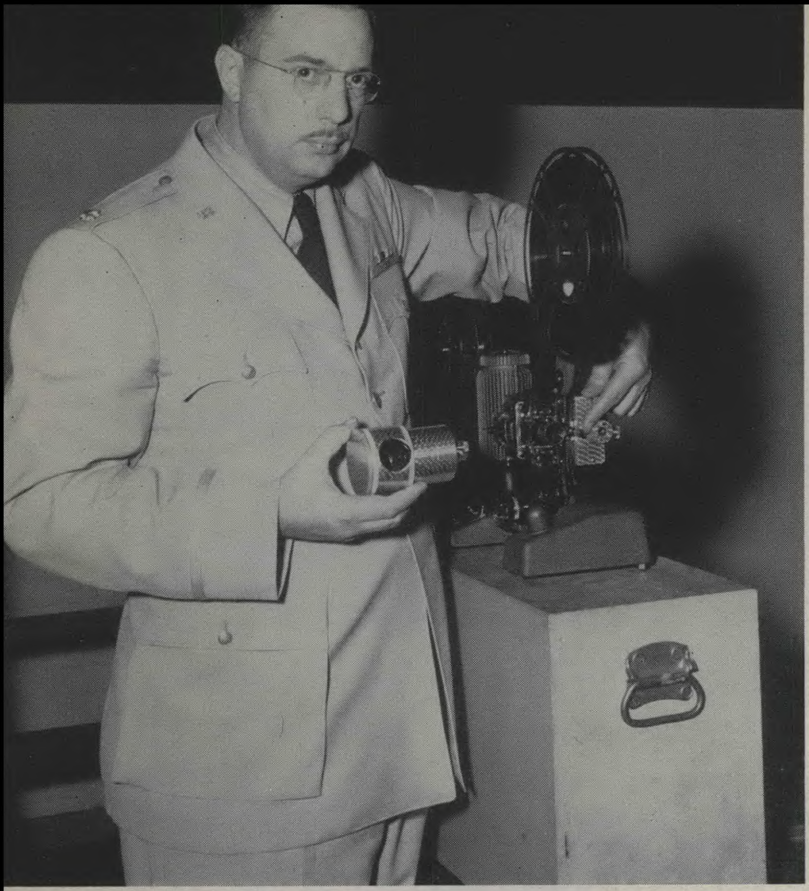

FIG. 1—Simplicity of installing polarizing attachment on Bell & Howell 16mm projector is demonstrated here by the author, Major Robert V. Bernier, who developed the new method for three-dimension motion pictures at Wright-Patterson Air Force Base, Dayton, Ohio.

Three-dimension Movies, In Color

Alternate frame principle is basis of new method for making and showing "3-D" movies with ordinary cameras and projectors.

By MAJOR ROBERT V. BERNIER

Technical Photographic Service Section,
Materiel Division, Wright Air Development Center

SIX FACTORS must be present to achieve the best results in three-dimensional color movies. These are light and shadow, perspective, color, focus reaction, movement of the viewpoint, and stereoscopic vision. All of these are present in the new system we have developed at Wright Air Development Center, Dayton, Ohio. The process became possible following the development of a barrel-shaped polarizer that revolves in front of the lens of the camera or projector. When films are screened by this system, persons in the audience wear polarized glasses that allow the left and right eyes to see alternately every other frame projected on the screen. The result is a true synthetic vision of the real subject itself.

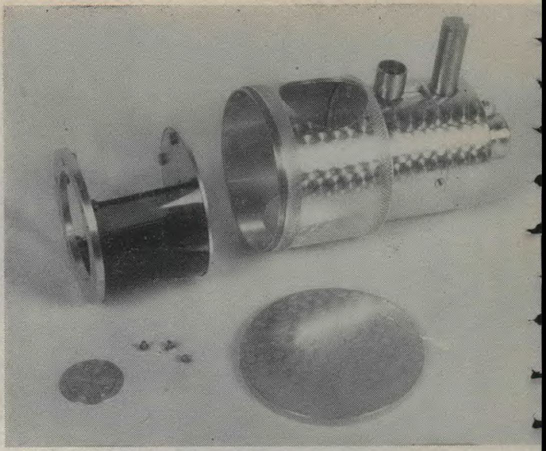

FIG. 3—Direct drive polarizer attachment, showing barrel and mounted polaroid filter. The filter rotates before projector lens, is heart of the alternate frame technique described by author.

The success of future entertainment three-dimensional films, if and when they make their debut, is dependent not only on the appeal that this added feature might have, but also dependent on the quality of the screen image. Therefore present quality standards will have to be maintained or even improved upon.

To be sure, there are applications of the three-dimensional motion picture other than for entertainment purposes. These are principally in the fields of education, industry and science. Here, portability of equipment and low production cost are prerequisites to the use of such films. For this reason, 16mm film seems to be the choice medium for motion pictures of this type.

The original decision to concentrate effort on improvements to the alternate frame technique was based on the possible advantages which could be had by maintaining full frame standards and at the same time confine at least the projection to a

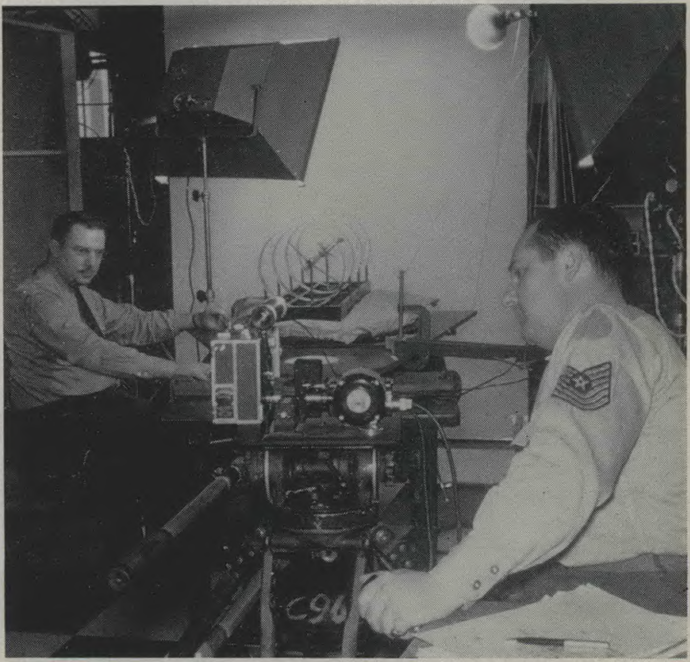

FIG. 2—Major Bernier aided by Master Sgt. John C. Blotner, Jr., prepare to shoot a scene for a three-dimensional color motion picture, using a Cine Special camera.

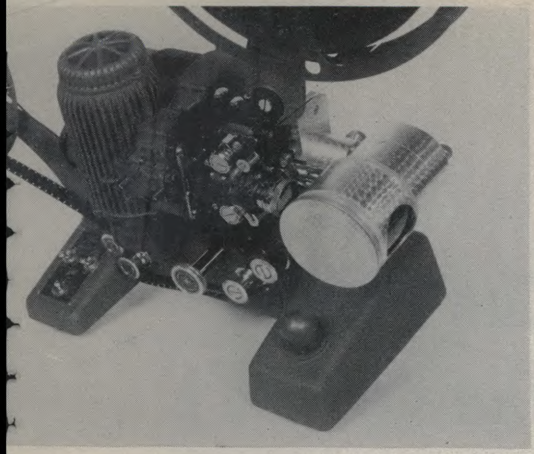

FIG. 4—Polarizer attached to a Bell & Howell 16mm projector which is specially equipped with a Morgana film movement. This solved the excessive flicker problem. Polarizer is gear-driven by projector.

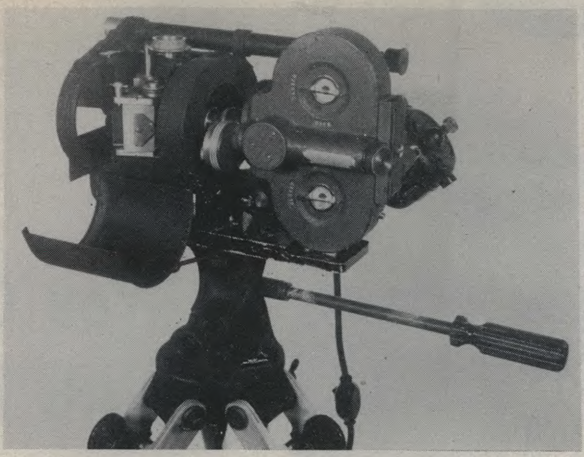

FIG. 5—Bell & Howell 16mm Filmo camera with stereo alternate frame selector. The camera mechanism is coupled with the gear train which drives a 180 degree shutter in front of the beam splitter.

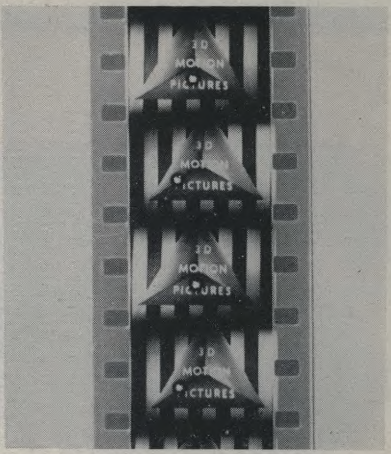

FIG. 6—Clip of 16mm alternate frame stereo film exposed on double perforated Fastax film. Note difference in position of objects in R and L frames.

single standard film. Fig. 6 shows a sample strip of alternate frame stereo movie film. On projection the right eye will see every alternate frame, the left eye will see those in between. Note the difference in position of objects on adjacent frames with respect to each other and to the edge of the film.

The projection requirements for alternate frame film are substantially the same as they are for stereo film of other systems. The right and left eye images must be registered properly on the screen and must be selectively polarized for their respective eyes. With this system it has been the practice to use the same type of attachment on the projector that was used on the camera. Such an attachment, a beam splitter with synchronized shutter, was tested prior to the development of the present adapter. The latter was developed in an attempt to eliminate the screen registration problems characteristic of the beam splitter attachment.

Fig. 7 and 8 show the principle of it's operation. Refering to the diagrams, the polaroid filter 16 is semicylindrical and positioned to be rotated on its axis, which is in the same plane as but normal to the lens axis. Polarization of the filter (20) when viewed from the lens position is 45 degrees upward and to the left. The film frame (22) having a left stereoscopic image therein is centered on the lens axis. The image (24) on the screen (18) may be seen with the left eye only by a viewer wearing standard Polaroid spectacles. In Fig. 8 the film (12) has been advanced so that a frame (26) having a right stereoscopic image thereon is centered on the lens axis while the filter (16) has been revolved one hundred eighty degrees from the position it occupied in Fig. 7. It is noted that, in Fig. 7, the outside of the semicylindrical filter (16) is presented to the lens (14) while in Fig. 8 the inside of the semicylindrical filter is presented to the lens (14). Moreover, the same axis (20) of polarization which, in Fig. 7, extended upwardly and to the left, now extends upwardly and to the right. Thus the image (28) on the screen (18) may be seen with the right eye only by a viewer wearing standard Polaroid spectacles.

Three stages of evolution of the barrel type polarizer attachment were first, a barrel driven through a gear train by power transmitted by the film itself; second, the same attachment geared to operate at three times its original speed so that it could be used on a projector incorporating the Morgana shuttle movement, and third, an entirely new gear housing driving the same type of barrel polarizer through a direct power shaft on the projector.

In the first stage described above, the film is threaded through a sprocket drive on the attachment. The latter has no other power connections to the projector. This attachment was first designed so that it could be used on most any 16mm projector. The movement of the film through the sprocket drive was sufficient to keep the polarizer in synchronization with its movement through the film gate. An adjustment knob on the attachment provided for changing the position of the drive sprocket with respect to the power sprocket on the projector. The increase or decrease in distance, by one frame length, between the two sprockets served to synchronize the rotating polarizer with right or left frames, at will, during projection. This was necessary to compensate for discrepencies in the right, left, right, etc., sequence in the film due to threading or splicing errors.

As predicted the flicker at 24 frames per second was considerable. Increasing the speed of projection to 36 frames per

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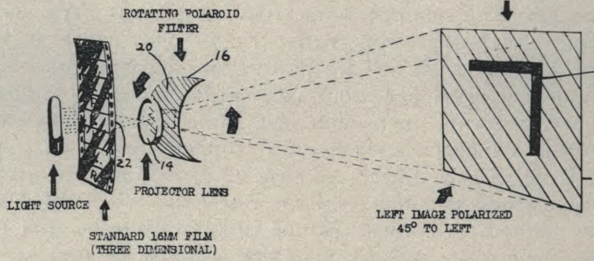

ROTATING POLAROID FILTER
20
16
24
22
14
R
18
PROJECTOR LENS
LIGHT SOURCE
STANDARD 16MM FILM (THREE DIMENSIONAL)
LEFT IMAGE POLARIZED 45° TO LEFT

FIG. 7—Diagram above and below illustrate principle of alternately and selectively polarizing right and left screen images. Here rotating filter is in place for left image registration.

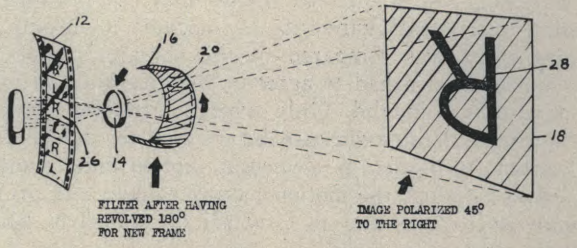
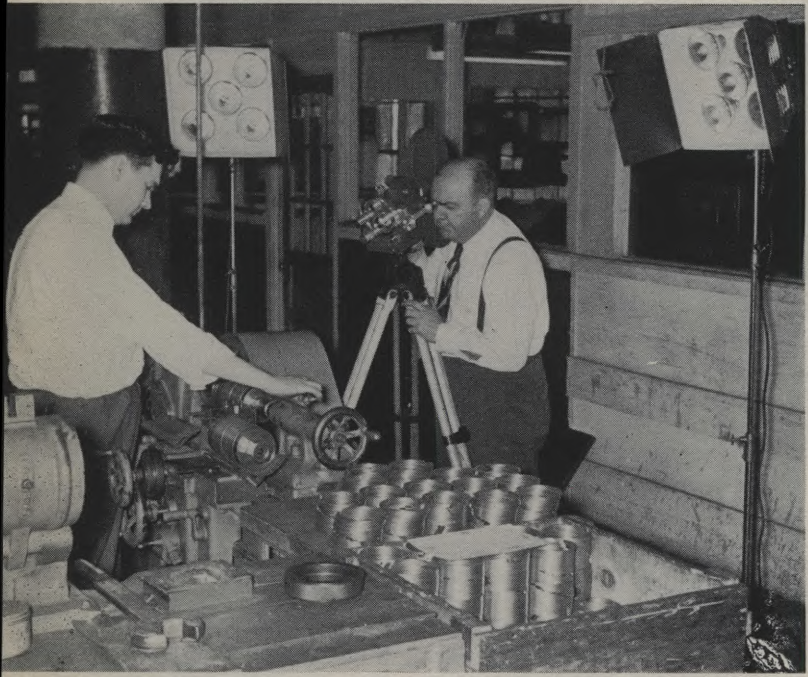

12
16
20
R
L
R
L
R
L
26
14
28
18
FILTER AFTER HAVING REVOLVED 180° FOR NEW FRAME
IMAGE POLARIZED 45° TO THE RIGHT

FIG. 8—Rotary polarizing filter in place for projecting a right hand frame image. Fig. 6, above shows respective frames.



A BELL & HOWELL "Specialist" camera and Colortran lights are basic equipment employed by Ramsey Corporation engineers in making visual time and motion studies of major factory operations. Most studies are filmed at high speed to provide slow motion analysis.

You Can't Argue With The Camera!

How the Ramsey Corporation made its own movies of product manufacture operations to establish a fair scale of pay rates.

By WILLIAM A. VOGLER

Industrial Engineer, Ramsey Corporation

THE RAMSEY CORPORATION, manufacturers of automotive and industrial piston rings, adopted the motion picture camera to establish just and accurate pay rates after a long series of time, motion and method study procedures had failed to create good relations between management and its employees.

In the first two decades of its history, the company had grown from a small shop with one employee, to a four-plant organization with some 900 or 1000 employees. We were operating as a Union shop, with straight piece work as the basis of compensation in all production departments. The piece rates had developed from time studies made by foremen and superintendents, men who had gained some knowledge of scientific management from short courses, text books, and practical experience. There are two fundamental elements to every time study and the resultant rate—the job to be done, and the method to be used. At one time we believed that the best move we made was to introduce a course of time study by elemental motions.

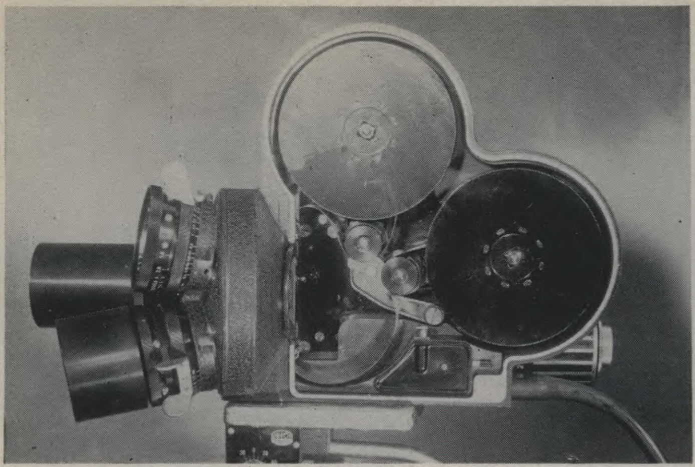
The men, however, often were skeptical and would gang together to defeat both the method and rate. To prove that time was being lost by idleness, for example, we installed time recording instruments wired to the machine in dispute. The resultant chart was compared to the operator's time card. Chart and time card had to agree or the grievance on part of the operator was invalid. Only when a grievance developed and we wanted an air-tight case did we discover that there still were certain inequities in elemental motion time standards. This led us to adopt the motion picture camera and projector for analysis purposes and to establish for ourselves accurate elemental time allowances.

In the beginning our research developed that motion picture equipment on the market was totally inadequate for our purpose. The machine operated at speeds of 16, 24, 32, or 64 frames per second. In the case of 16 frames, a frame represented a time interval of .0010417—a very clumsy base unit and subject to considerable error when used for lengthy computations. Mechanically, also, these speeds were only nominally correct. Variations in motor speeds, change of voltage, friction, and other factors made precision impossible.

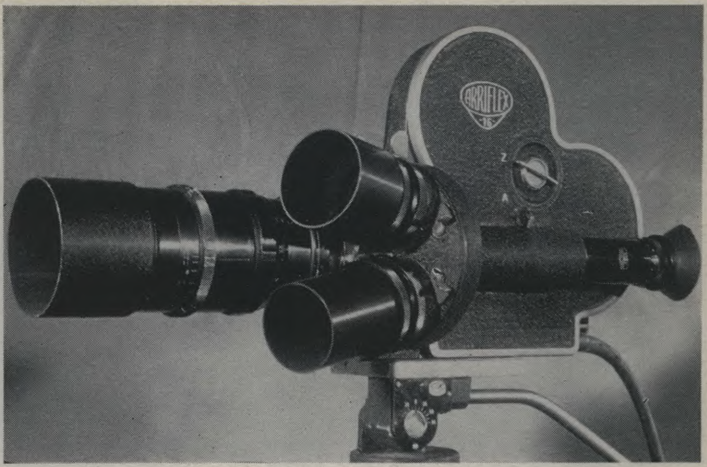
Of the cameras considered, we found the Bell & Howell model 70-H 16mm. camera, after certain modifications were made, best adaptable to time and motion work. The modifications included recalibration of the speed dial to show the camera speed in terms of frames per minute, i.e., exactly 500, 1000, 2000, 2500, 3000, 3500 and 4000. This change—one of the most important—made it easy to compute the time for each element of a job and eliminated errors caused by losses in dropping fractions when the speed was calibrated in the conventional way. Also, the old frame counter on the projector

(*Continued on Page 328*)

WITH the film method of time and motion study, work methods may be analyzed at leisure, away from the factory. False or unnecessary movements, not seen in actual operation, stand out clearly when the film is projected in slow motion.



SIDE VIEW of new Arriflex 16mm camera, showing film path and double sprocket film transport system. Newer models will provide for 200 and 400-foot external film magazines.



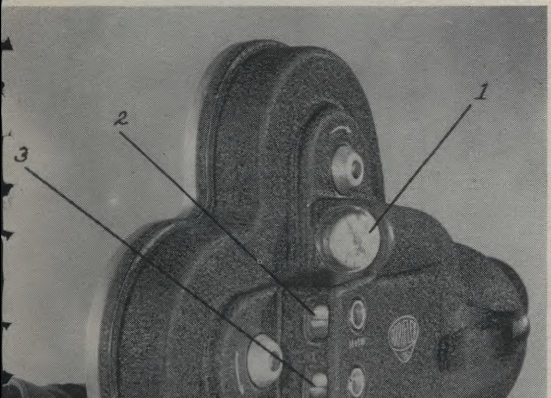
LATEST type lens turret is a feature of the camera which provides diverging lens seats, permitting use of telephotos and wide angle lenses mounted together without interference in latter's field of view.

The New Arriflex 16mm Camera

Incorporating all the advantages of the Arriflex 35, the new 16mm model also has a number of outstanding features of its own.

By RAY SCOTT

THE LONG ANTICIPATED 16mm version of the famous German-made Arriflex camera made its initial appearance at the recent Cologne Fair, and is soon to be distributed in the United States by Kling Photo Supply Corporation in New York City.



REAR VIEW of camera, showing some of its special features: (1) tachometer, (2) footage counter, (3) frame counter, (4) rheostat, and (5) motor reverse switch.

The Arriflex 16, which weighs only 6½ pounds, incorporates all the advantages which gained a world-wide reputation for the Arriflex 35. In addition, the "16" possesses a number of outstanding improvements and refinements, which further enhance its all around application, and are certain to make it a favorite camera in the production of television and industrial films.

One of its principal features is the mirror reflex viewing system, which permits the cameraman to view and focus through the taking lens, even with the camera running. Its predecessor, the Arriflex 35, is said to be the first motion picture camera offering this efficient feature. It functions with equal perfection in the "16." Because of the smaller dimension of the 16mm camera, the mirror reflex system is constructed on an entirely new basis, and many improvements have been added — one of the most important being the increase in size of the shutter opening to 180°.

An excellent optical system produces a clear, well-defined image that shows every detail of the picture uninverted and right side up, and correct for parallax. It does not matter whether the lens is wide open or stopped down, or whether the camera is running or still. Film and groundglass images have identical focal planes—obviously very critically adjusted.

The groundglass image is viewed through a 10-power adjustable magnifier. The finder tube is constructed in such a manner that it is impossible for light to strike the film, even when the eye is removed from the rubber eyecup. The eyepiece is intended for sighting with the right eye. An extension piece for left eye sighting can be supplied as an accessory.

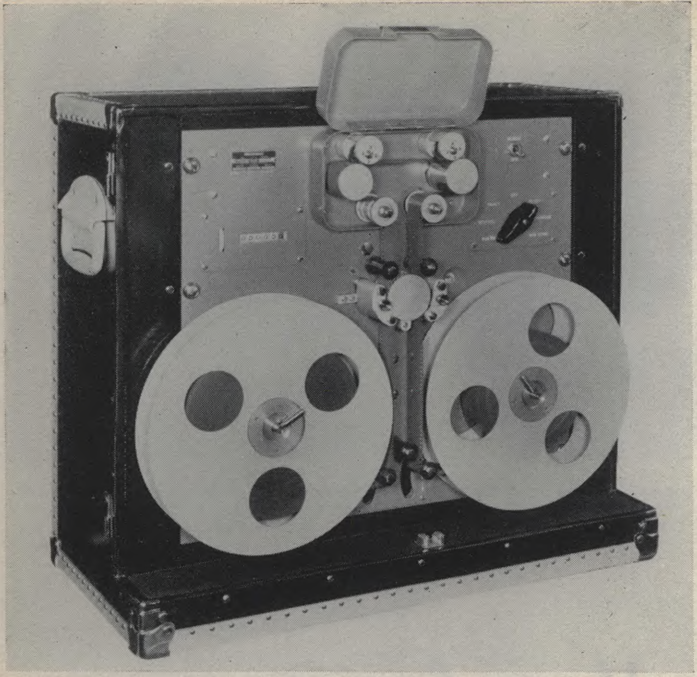
The lens turret accommodates 3 lenses and affords quick changeover. Instant mounting or removal of lenses is provided by a convenient bayonet mount, the same as on the Arriflex 35. Long focus and telephoto lenses can be used without any limitation as to size, because the turret is so constructed that the optical axes of the three lenses diverge from each other. Thus, wide angle lenses may be mounted next to telephoto lenses without danger of the latter cutting into the field of view of the former. The taking lens, of course, when in position for shooting, points directly forward at the object or scene. The turret provides still another advantage: it is so

(*Continued on Page 332*)

The RCA Magnetic Recording System

Portable field or studio models are designed for high-quality professional recording on either 16mm or 35mm film.

By RALPH LAWTON



RCA's portable magnetic film recorder, type PM-62, which features immediate playback, forward or reverse drive, fast rewind, and torque motor feed and takeup. Same basic unit is also available for rack mounting.

THIS IS THE FOURTH in the series of articles by Ralph Lawton describing various magnetic film and tape recorders designed for use in professional motion picture production. Previous articles have described the Westrex (May), Kinevox (June), and Stancil-Hoffman (July) recorders and recording equipment. Another descriptive article will appear in the September issue.—EDITOR.

IT WAS INEVITABLE that the Radio Corporation of America, which was among the first to pioneer in optical recording equipment for sound pictures, should extend its operations in the newer field of synchronous magnetic film recording. RCA's magnetic recording system, especially designed for major motion picture production, was first demonstrated by the company at the Spring (1950) Convention of the Society of Motion Picture and Television Engineers.

The system, which includes a new magnetic recorder-reproducer, mixer amplifier, recording amplifier assembly, and power supply, has been designed for high-quality professional recording in film production; 16mm, 17½mm and 35mm systems are available—that is, using perforated magnetic tape in these sizes—either in portable carrying cases for location work, or as rack-mounted equipment for use in the studio. Heart of the new system is the magnetic record-reproducer unit, which features a unique, high-quality head housed in a special metal shield box.

The portable recording unit is designated as the PM-62 system, and is mounted in a portable case of plywood and fibre construction with flush-mounted handles at each end for carrying. It is designed to permit use of recorder while in the case, with the doors on the operating side either in open or closed position. The doors have 180° swing. Transparent Lucite windows are placed so the operation of the two film reels and the dash pot windows can be observed when the recorder is in use with the doors closed. Mounted on split hinges, doors may be removed from case entirely, when desired.

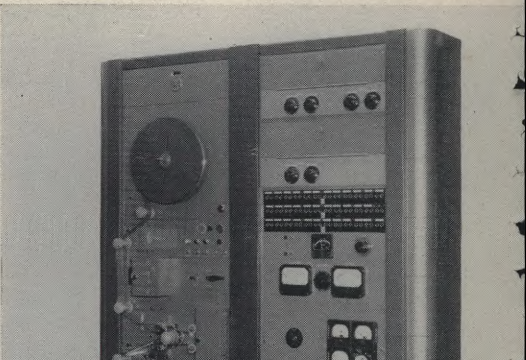
Access to rear of the recorder is obtained by removal of the back of case by means of six camlock fasteners. Ventilation for motor and mechanism is provided by two screened openings at the back.

The recorder can be furnished with almost any type motor drive desired. Torque motors are used for takeup and holdback. Inertia controlled drums at the recording and playback positions combine with spring idlers in a tight loop drive to provide smooth, constant film motion. Provision is also made for operation in either direction at standard recording speeds, also for high-speed rewind.

Normal reel capacity is 1000 feet and special non-magnetic split reels of various capacities are available to speed loading and unloading.

A single control switch operates the recorder for recording or reproducing. A separate toggle switch and a roller-operated switch control the torque motors for rewind and automatic end-of-reel shutoff.

(*Continued on Page 322*)



RCA's new triple track magnetic channel which affords recording of three tracks on a single 35mm film, simultaneously or at different times, or for putting dialogue, sound effects and music dubbing masters on a single film.

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Shooting News Films For Television

Like a fireman, you've got to be ready to go anywhere, anytime, in this touch-and-go game, where scoring a "beat" on competitive cameramen is just one of the rewarding experiences.

By D. LISLE CONWAY

Director, Photographic and Special Events Dept., WHEN, Syracuse, N. Y.

IN THE ARTICLE "Station Production of TV Motion Pictures," which appeared in the June issue, I pointed out that at present television stations with their own motion picture production setup usually confine their activities to three types of films: promotional and program production, commercial or "spot" films, and TV newsreel films. The latter, perhaps, are the most exciting for the cameraman. It challenges his ingenuity and his stamina and brings him in direct contact with the most important local happenings of the day.

Such news coverage may be classified as 1) the planned special event, such as American Legion or Labor Day parade, or local beauty contest and 2) spot news filming of disasters, such as train and plane wrecks, fires, police work, etc.

With the planned special event, you have the advantage of pre-planning both in terms of footage to use, locations for shooting, and scope of coverage. Usually the cameraman is accompanied by an assistant whose job it is to make brief descriptive notes of content of each take, including data concerning length of shot in terms of seconds. This becomes highly important later in supplying data to the news editor who usually prepares the commentary that will accompany the picture while the film is being processed. After the footage is processed and sent to the editor for screening and cutting, only a minimum of revision in the script will be required.

Because popular special events invariably are covered by cameramen from competitive stations, it becomes a matter of getting shots quickly, rushing them through processing and scripting, and putting the whole on the air ahead of the competition. And of course, your chief aim always is to make your pictorial account better in every way: better camera angles, exposure, and overall interest.

Because sponsors and advertising agencies will be watching your work on the air, as well as the general video audience of your locality, station prestige will often rise or fall on the quality of this phase of its telecasting.

With this phase of TV film production, careful research can pay off handsomely. It will enable you to determine in advance the place and time where each subject you plan to film will be. You can check in advance the light and shadow conditions at the scene, and thus avoid shooting at the wrong time of day or from the wrong camera location for the prevailing light. You can determine in advance such important things as probable weather conditions, and the aperture settings for your lens, and with this information assembled you can move easily into the area, set up your camera, make the shot or shots, and move on to the next location with a minimum of time.

Parades, of course, are more or less static subjects. After the first few shots, it's advisable to change pace and vary them. Instead of recording float after

SCENES, enlarged from 16mm frames, of newsreel material photographed by author for station WHEN. They illustrate the good quality photography required for TV. 1) Fire, downtown Syracuse; 2) freight train wreck, Mallory, N. Y., April, 1951; 3) airline crash, Oneida, N. Y.; pictures were secured after 50-mile-battle with traffic; 4) ordination of Bishop Cunningham, Syracuse, N. Y.

float from the same camera position, get closeups of such interesting highlights as the bandleader, a pretty majorette, the important local personality riding in the lead car, and reaction shots of kids in the crowds watching the goings on with rapt interest.

The best coverage of such events often will result where the cameraman uses a handheld camera and is free to move about the parade area, getting up on marquees or second floor windows, etc., for high angle shots. The more angles and human interest that can be gotten on film, the more interesting material the editor will have to work with back at the station when it comes time to assemble the newsreel for the air.

When the event is over, the race to get the pictures on the air begins. If there is competition in the area, then undoubtedly the processing tanks will be in readiness at the station by the time the film arrives, in an effort to score a "beat." Most stations producing films for TV have their own rapid film processing equipment, such as Houston, Bridgamatic, etc., and it is a simple matter to put the films through the "soup" in a matter of an hour or less.

Television has an advantage over motion picture theatres in that it is unnecessary to process the film to a positive or make positive prints. The polarity of the film projection chain (Iconiscope, film, camera, and associated equipment) can be reversed electronically so that a negative film becomes positive when telecast and the image seen on home receivers is correct pictorially.

The descriptive notes pertaining to the various takes now become important. The news editor writes his tentative script from these, basing the length on the time indicated for each take in the notes. Then when the film comes out of the processor and is sent to the editor, he uses the cameraman's notes for reference in identifying and cutting the film, as directed by the editor in his narration script. Thus when the film goes on the air, instead of putting the narration on a sound track, it usually is spoken by a commentator as the film is projected on the pickup tube.

The most challenging of all camera coverage is the filming of spot news events. Such an assignment can come to the cameraman at anytime—during the shooting of a special event or some other assignment away from the studio, or in the middle of the night. When a big airliner crashed near New York City recently, there was the inevitable phone call from WHEN's news editor that sent me scurrying to the scene. It was about fifty miles away. First meager reports said about twelve persons were believed killed. It was five p.m. The

(*Continued on Page 329*)

Television Film Production

By LEIGH ALLEN

JULY PRODUCTION: The following cameramen were actively engaged in Hollywood in photographing films for television during the past month:

LUCIAN ANDRIOT, A.S.C., The "Amos 'N Andy" series. Hal Roach Studios, Culver City.

GORDON AVIL, "The Big Story Book" series. Television Associated Prodns., Hollywood.

JOSEPH BIROC, A.S.C., series of musical short subjects. Snader Telescriptions, Hollywood.

WILLIAM BRADFORD, A.S.C., The "Gene Autry" series. Flying A. Prodns., Hollywood.

LEONARD CLAIRMONT, "Mr. Green Thumb," Voglin Corp., Hollywood.

ELMER DYER, A.S.C., "Craig Kennedy, Criminologist" series. Louis Weiss & Co., Hollywood.

RAY FOSTER, "Cameras And Models In Action," series. Paul Parry Prodns., Hollywood.

FRED GATELY, "Vanishing Wall," New World Prodns., Hollywood; "Special File" and "Voyage of the Scarlet Queen," Allegro Prodns., Hollywood.

PAUL IVANO, A.S.C., "The Loving Family" series. Green Film Prodns., Hollywood.

BENJAMIN KLINE, A.S.C., "Cry Of The City" series, Bing Crosby Prodns., Hollywood; "Fireside Theatre" series, Frank Wisbar Prodns., Hollywood.

FELBER MAASDEN, "The Jonathan Story" series. Wilkins-Gooden Prodns., Hollywood.

JOHN MAC BURNIE, "Roy Rogers" series. Roy Rogers Prodns., Hollywood.

VIRGIL MILLER, A.S.C., "Rupert Hughes Playhouse" series. Trans-World Pictures, Hollywood.

IRA MORGAN, A.S.C., "Dick Tracy" series, "Brenda Starr" series, P. K. Palmer Prodns., Hollywood.

PETER O'CROTY, Series of 12-min. patriotic pictures. Peter O'Croty Prodns., Hollywood.

KENNETH PEACH, A.S.C., "Cisco Kid" series. Ziv Transcriptions, Hollywood.

CLARK RAMSEY, "Superman" series. Superman, Inc., Hollywood.

GUY ROE, A.S.C., "Invitation Playhouse" series. Williams Prodns., Hollywood.

MAX STENGLER, A.S.C., Series of 12 short subjects. Teleclix, Hollywood.

WALTER STRENGE, A.S.C., "Trouble With Father" series. Roland Reed Productions, Beverly Hills, California.

STEWART THOMPSON, "The Calico Kid" series. Royal Five Prodns., Hollywood.

JAMES VAN TREES, A.S.C., "Groucho Marx Show," and "Who Do You Want To Be?" Filmcraft, Hollywood.

LESTER WHITE, A.S.C., Bigelow Theatre series. Jerry Fairbanks Prodns., Hollywood.

•

Mack Stengler, A.S.C., directed the photography on the new series of Horace Heidt Show films, shooting on 35mm film, following Heidt's decision to abandon 16mm for the wider film.

•

A Research and technical unit has been set up by IATSE Photographers Local 659, in Hollywood, which will advise TV producers, especially newcomers, of photographic techniques and time-saving methods applicable to the production of motion picture films for television.

•

Number of known TV film production companies presently in Hollywood, according to *Hollywood Reporter* columnist Dan Jenkins, now totals 88.

•

Influx of new TV film producing units on the Eagle-Lion lot in Hollywood has changed minds of owners against selling. As of July 1st, there were more than 30 film and TV movie producers active there.

•

KNBH's TV Newsreel cameras beat the live TV cameras to the air with pictures of recent refinery fire in Wilmington, Calif. Station got on air with its newsfilm just 55 seconds ahead of KTLA with its live telecast of the conflagration. To secure pictures of blaze, KNBH flew cameraman Danny Rouser to the scene in a Paul Mantz plane.

•

A title registration bureau for TV film producers has been set up by National Society of Television Producers, to be administered by writer-producer Martin Mooney. Registration fee is $1.00, and is renewable after six months if proof of activity is available.

•

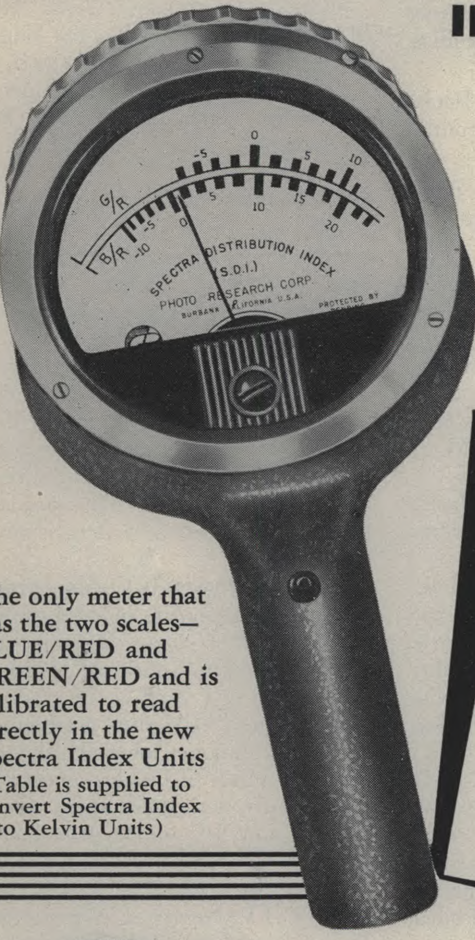
Virgil Miller, A.S.C., who directs the photography of the new Rupert Hughes series of twenty-six 30-minute TV pix for Trans-World, will shoot all the pictures on 35mm color film. Company will make a black-and-white print for

(*Continued on Page 334*)

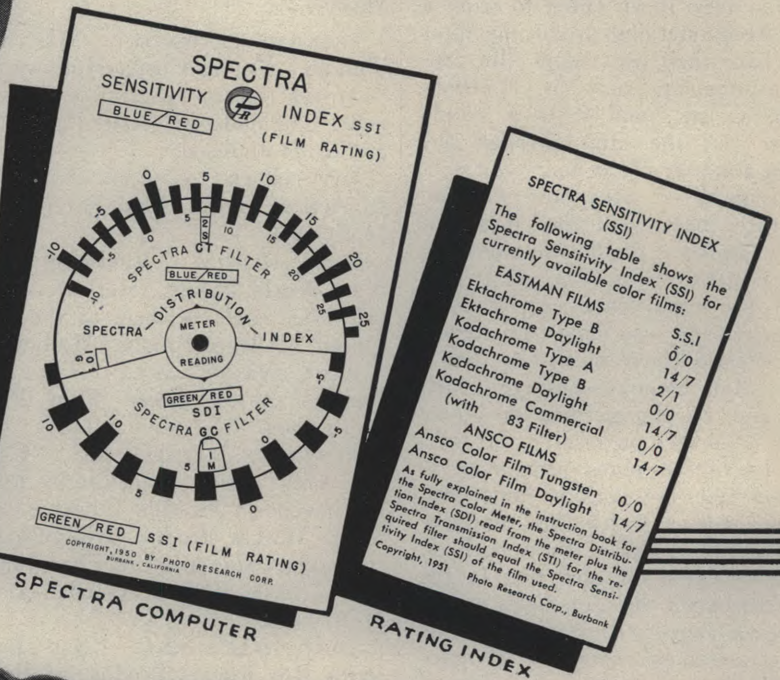
New SPECTRA 3 COLOR METER

THE ONLY METER THAT MEASURES ALL LIGHT SOURCES— INCLUDING *DAYLIGHT*, ACCURATELY

For a true color picture, there must be a correct relationship between the color content of the light and the color sensitivity of the film. SPECTRA 3 Color Meter measures the proportionate amounts of all three primary colors present in the light source, and indicates the filters necessary for positive color correction.



The only meter that has the two scales—BLUE/RED and GREEN/RED and is calibrated to read directly in the new Spectra Index Units (Table is supplied to convert Spectra Index into Kelvin Units)



SPECTRA COMPUTER

SPECTRA SENSITIVITY INDEX
(SSI)

The following table shows the Spectra Sensitivity Index (SSI) for currently available color films:

EASTMAN FILMS	S.S.I
Ektachrome Type B	0/0
Ektachrome Daylight	14/7
Kodachrome Type A	2/1
Kodachrome Type B	0/0
Kodachrome Daylight	14/7
Kodachrome Commercial	0/0
(with 83 Filter)	14/7
ANSCO FILMS	
Ansco Color Film Tungsten	0/0
Ansco Color Film Daylight	14/7

As fully explained in the instruction book for the Spectra Color Meter, the Spectra Distribution Index (SDI) read from the meter plus the Spectra Transmission Index (STI) for the required filter should equal the Spectra Sensitivity Index (SSI) of the film used.

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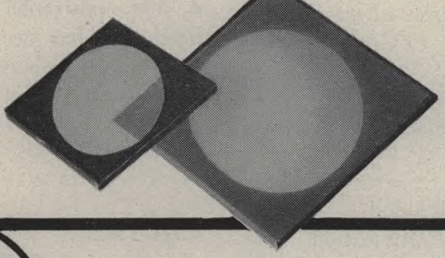
RATING INDEX

SPECTRA CT and GC FILTERS

CT (Color Temperature) GC (Green Correction)

All filters are optically flat and coated. The SPECTRA 3 Color Meter indicates the correct SPECTRA Filter to be used.



Write today for our descriptive literature of SPECTRA 3 Color Meter, Filters and prices—also for conversion of existing models to the new 3 Color SPECTRA.

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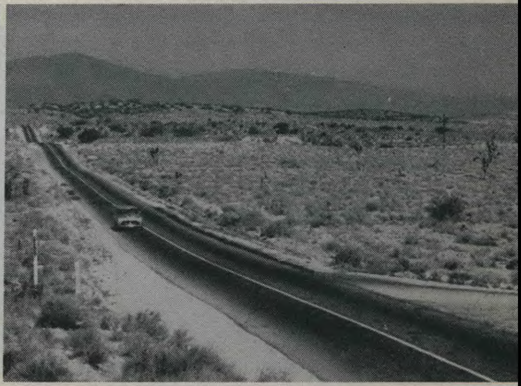
***EASTERN REPRESENTATIVES:* CAMERA EQUIPMENT CO., 1600 BROADWAY, NEW YORK 19, N. Y.**

SUNRISE MINUS TEN MINUTES—from this vantage point author Taylor photographed his time lapse exposure study of a desert sunrise.

SUNRISE PLUS TEN MINUTES—the sunrise sequence completed, the photographer focused his camera on the highway winding out of the desert valley.



THE ROAD BACK HOME—the sun, now well up, made the desert a little less glamourous. Still, it had its photogenic points.

Filming A Desert Sunrise

Dramatic record of changing pre-dawn sky and desert colors photographed on Kodachrome in single-frame interval exposures.

By CHESTER TAYLOR

MY ALARM CLOCK rang at 3 a.m. one morning a few weeks ago. By five o'clock the city was more than fifty miles behind me, and ahead lay the desert wasteland with its uncanny, early-morning loneliness.

It was many years ago that I first became fascinated by the beauty of a desert sunrise, and I resolved then that some day I would capture the colorful event on motion picture film—pictures in color that would show the indescribable beauty of the blue and purple light that flares briefly in the eastern sky some twenty minutes before the sun makes its appearance; pictures of the gray-white surface fog that seems bent on hiding in the desert valleys and canyons in order that it might escape the on-coming light of day. Recognition would also be given the ever-changing yellow, orange and red light of the sky that prevails five to ten minutes before the sunrise. And finally, that ball of fire that appears magically from below the horizon to balance itself on top of some distant mountain peak.

These were my thoughts as the miles slipped by on the desert highway that morning. In the back seat of the car was my 16mm Bolex, loaded with Kodachrome and mounted on the tripod, ready to go into immediate action. The gray of the eastern horizon was getting lighter and a glance at my watch indicated the sunrise was only forty minutes away. Time was running short and I knew that I must find the location for the camera setup in the next few minutes.

It was something like ten minutes later, after the highway had wandered around through some desert hills and curved out into a level valley, that I found the ideal spot from which to shoot. It was a sagebrush-covered hill that rose a good hundred and fifty feet above the road, and offered a commanding view of the valley and the rolling mountains in the distance.

By the time I had made my way up the hill and got the Bolex set up, the sun's scheduled rising was only twenty minutes away. A light reading was taken from the brightest section of the sky and the lens opening set for single frame exposure.

In composing the scene in a manner that would lead the eye in from the foreground to the distant mountains where the sun was to appear, I had for a compositional element white flowering desert Yucca plants. One was positioned in the immediate right foreground, another farther down in the mid-foreground, and still another that had shed its white flowers, in the mid-background. The latter was to act as a pointer to indicate the approximate place on the

(*Continued on Page 321*)

HERE COMES THE SUN!—Chester Taylor gets set to operate his camera, one frame at a time at intervals, to record the colors of a sunrise on the California desert.

Consider Screen Results First..!

The way to economize on film is to avoid making too many shots that must be eliminated when editing. Better planning will give you more film to shoot.

By CHARLES LORING

PLANNING your photography in sequences in advance has the added value of teaching you to think cinematically and to shoot more creatively.

FOR MOST AMATEUR movie makers, film cost is an important item. It directly controls the extent of their movie making activities. Yet it is surprising the amount of odd shots and deleted footage many amateurs have stored away that, were it spliced together, would represent a lot of film that otherwise might have been used for good shots. This suggests there is a definite place in amateur movie making for economy, and that is in planning filming so that there is no waste footage in haphazard shooting—no shots that ultimately are relegated to the scrap heap when editing.

Lest this suggestion for economy be misconstrued, it is pertinent to point out that *results on the screen* is what should be considered first, regardless of the subject or project to be filmed.

In professional movie making it is the setup, the talent and the technicians that account for the major cost of shooting. Time, of course, is the real cost item here, and—unlike with the amateur—film cost is secondary. In the studio, several takes of one scene is commonplace practice, whereas with the amateur, he usually has to get the shot right the first time, if he is to have enough film to complete his picture.

We are concerned here with economizing on film where it would ordinarily be wasted through careless or haphazard shooting methods. Many amateur movie makers have had the experience of shooting a subject, only to find out in the cutting room that they have failed to get all of the shots necessary to cover the story fully. In order to avoid making this same mistake again, they usually go to the opposite extreme the next time and cover the subject so extravagantly that much of the footage is repetitious, and has to be discarded. This practice is especially deadly when the subject happens to be a static one; showing it from a dozen different angles and letting the footage run long won't make such a subject any more interesting.

The best way to avoid both under-coverage and over-coverage of a subject is to pre-plan shooting as carefully as possible. This cannot always be done—and, indeed, it should not be carried to an extreme where it will take all the joy out of what started off to be a casual outing or vacation trip. Pre-planning need not be a chore, nor is it necessary in most cases to write an actual shooting script. A simple scene schedule listing in sequence the scenes needed to tell a complete story will usually do the trick quite adequately. It will not only keep you from omitting essential scenes, but it will also make it unnecessary to shoot everything in sight in order to make sure you have covered the subject.

Planning your shooting sequences in advance has the added value of teaching you to think cinematically and to shoot more creatively. It is good discipline in that it leads you to formulate sequence and continuity in your mind before transferring it to film. The ability to visualize the cut film thus not only saves raw stock, but gives the resulting picture a much more professional finish.

Sometimes a subject is so overwhelming in scope that it is difficult to decide in advance what should be included and what should be left out. If you try to cover every facet of your subject you will almost surely end up with a lot of superfluous footage. Even if these extra scenes are interesting in themselves, they usually do not contribute enough to the telling of the main story to warrant being included in the final cut. In a case like this it is doubly important to find out in advance, if possible, just what is going to happen—and plan your shooting to encompass the important points.

In the case of a public affair or pageant, for example, it is often possible to secure in advance a schedule of events from one of the officials or the public relations committee. If you are going to film some event or process that happens more than once, such as a circus or an ice show, study it one time through one performance without trying to shoot anything. Take notes on the important features to be covered, and then film it according to a plan.

With both amateur and professional, more footage is discarded for mechanical and technical faults than for any other

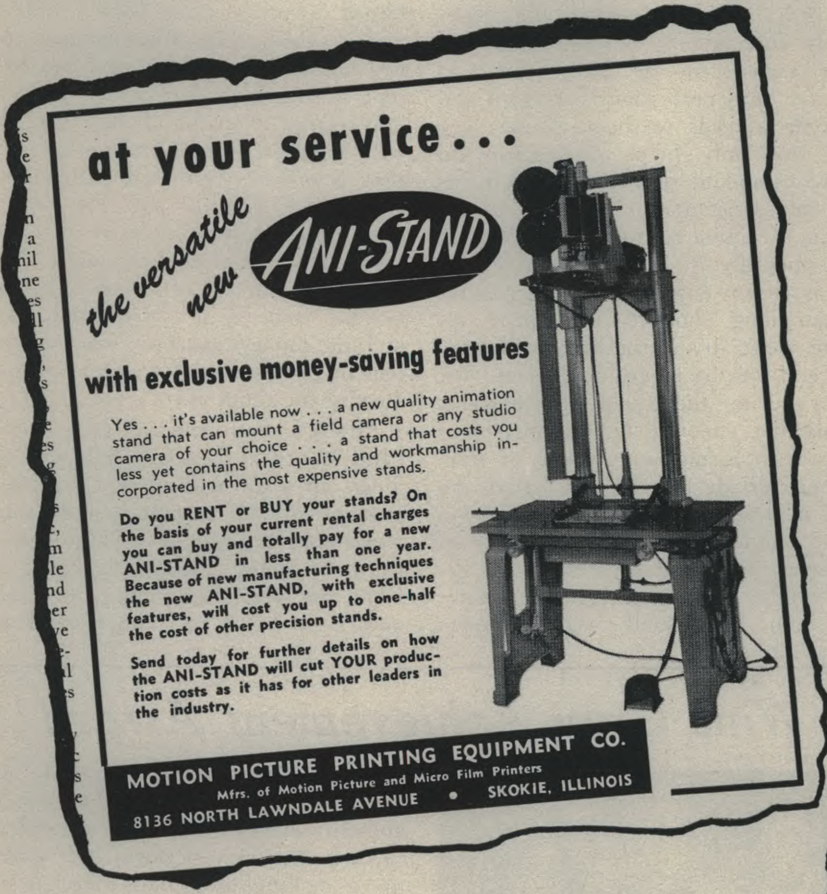
(*Continued on Page 318*)

"We have received excellent results from our 1/3-page ad in the April issue of *AMERICAN CINEMATOGRAPHER*--"

**— Motion Picture Printing Equip. Co.
Skokie, Illinois**

This Advertiser Said Further:

"The publicity given our product in your editorial news columns contributed also to the successful results obtained on Ani-Stand sales. As a result, we are planning additional advertising for future issues of American Cinematographer."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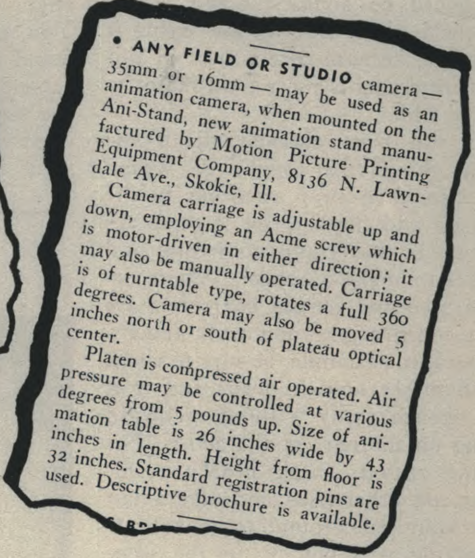

• **ANY FIELD OR STUDIO** camera—35mm or 16mm—may be used as an animation camera, when mounted on the Ani-Stand, new animation stand manufactured by Motion Picture Printing Equipment Company, 8136 N. Lawndale Ave., Skokie, Ill.

Camera carriage is adjustable up and down, employing an Acme screw which is motor-driven in either direction; it may also be manually operated. Carriage is of turntable type, rotates a full 360 degrees. Camera may also be moved 5 inches north or south of plateau optical center.

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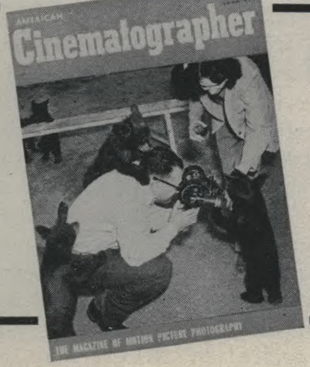

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AMERICAN CINEMATOGRAPHER • HOLLYWOOD

CONSIDER SCREEN RESULTS FIRST

(*Continued from Page 316*)

single reason. Some of this is due to inadequate technique, but even more is the result of just plain carelessness. Unsteady camera handling, for example, is a common reason for the resulting footage to be jumpy and not good enough to be shown. Wherever possible a tripod should always be used. When this is not possible, the cameraman should brace himself against something solid enough to insure a steady camera.

Another basic rule is to check the interior of the camera for dust and grit, as well as cleaning the aperture plate and opening before each new roll of film is loaded. This will eliminate the waste that goes with scratched film or fuzz on the frame margins. Another often tragic waste is that which results from a loss of loop. After threading a new roll of film in the camera, run off a few feet of film with the camera door open to make sure that the loops are holding. It goes without saying that exposure and focus should be double-checked before each scene is shot—but we are saying it nevertheless, because carelessness in this department accounts for a great majority of wasted film.

After you have checked all of the technical things that might go wrong camerawise, turn your attention to the scene itself and check to see if there are any elements that could go wrong and force you to make a retake. Where actors are used and certain characters are slated to open a gate and walk toward the camera, for example, be sure to check the gate to see how it opens and if it can be opened easily without awkward fumbling on the part of the actors. For the same reason, check nearby traffic (human and otherwise) and take a last look at your background to make sure that nothing will pop up in the scene that you hadn't bargained for.

Professional movie scripts go into great detail to break each sequence up into separate scenes or shots, but even so, it is still standard practice in some major studios to shoot each sequence in its entirety from eight or ten angles, and then let the editor select the take that he wants in assembling the final cut. While this may be a sure-fire way of insuring complete coverage of the action, it is also very wasteful for the amateur in terms of time and the amount of film stock used.

The producer or cameraman forced to work on a somewhat smaller budget than a Hollywood studio will do better to break his action up into separate scenes and angles, and stick to this plan in shooting. When he has made a satisfactory take from the first angle, he should then set up for the second shot and overlap the action by repeating just a bit of the action that took place at the end of the first shot. This will give enough extra footage to insure a smooth cut, but not enough to result in any great waste of film.

In order to reduce retakes and consequently the amount of film used, rehearse each scene as many times as necessary until perfection is attained and the scene is ready to shoot. These "dry runs" not only help your actors to achieve a smooth performance, but enable your assistants to get used to the pattern of action so they can follow it more smoothly.

It is often wise to make a master medium long shot of the entire sequence, especially if the camera is on a dolly and can be moved in and out for variety during the course of the scene. In this way you will have a variety of angles with a minimum waste of film. You may decide that certain actions demand a close-up or special emphasis in camera angle. If so, these portions of the scene can be repeated from the desired angles and cut in to the master scene later. It is usually well to protect yourself in this way, if only because it will help you to tighten up in the cutting room a scene that proves too slow in pace when you view your "rushes." If these cut-in shots are kept short, the duplication (and consequent waste of repetitious film) will be held to a minimum.

In Hollywood it has always been the practice to take a scene over and over again until a perfect take is "in the can." This means that one scene might be filmed 20 or 30 times before perfection was reached. This uneconomical practice has been somewhat modified by recent slashes in budget which have been universally adopted. Today the scene will be taken several times—but a take that is *almost* right will often be accepted as O.K. The part that was "almost right" will be covered by a cut-in shot, such as a closeup or angle shot of that particular bit of action. This practice has resulted in a tremendous saving in time, money and film—and the amateur or professional 16mm producer will do wise to adopt it.

Often a long scene will progress beautifully until it is about half-way shot. Then an actor will blow his lines, the cameraman will execute a jerky camera movement, or a light will go out. Instead of doing the whole scene over from the very beginning, the practice now is to "pick up" the scene from a

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Wins Gray Achievement Award

R. C. HARDCASTLE—winner of first Ralph E. Gray Achievement Award.

The Movie Makers Club of Oklahoma City has announced R. C. Hardcastle, club's president, winner of the first Ralph E. Gray Achievement Award.

The club was endowed with the annual award by Ralph E. Gray, renowned amateur movie maker and honorary member of the Oklahoma club.

It was Gray's desire to provide recognition for the member of his club who annually makes the greatest contribution toward the advancement of amateur movie making as a hobby. He has stipulated that a prize-winning picture was not to be a consideration in selecting candidates for the award. "A member may not be able to win a picture contest with his films," said Gray, "yet he may make outstanding contributions toward the welfare of his fellow movie makers. I believe, therefore, such achievement should be recognized as readily as the making of an outstanding 8mm or 16mm film."

The award is in the form of a engraved plaque, which remains in the club headquarters. Names of the annual winners are engraved thereon, and a framed scroll indicative of the award is given the winner for his permanent possession.

Gray, a native of Oklahoma, and an amateur movie maker for many years, has received many national awards for his films. His 16mm Kodachrome record of the Mexican volcano Paricutin was acquired by MGM and released as a short subject two years ago.

Soundman Jack Clink operating Kinevox recorder for Edgar M. Queeny during the filming of "Latuko" on the African veldt.

Complete Kinevox portable synchronous magnetic film recorder —
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The Sound was Recorded on a **KINEVOX!**

A leading national magazine, in a recent issue, acclaimed the "remarkable sound track" of "Latuko," filmed in Africa in 16mm color by Edgar M. Queeny. It said:

"It's remarkable sound track* carries the authentic cries of wild animals, the natives' strange lingo, the pulsing of their drums."

*Recorded entirely with a Kinevox portable synchronous magnetic film recorder.

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point in the action just before the place where things started to go wrong. The gap in action is then covered by a cut-in shot as above.

The cutaway shot is an extremely valuable device, not only in the dramatic sense, but as a way of saving film also. Simply described, it is a shot which cuts away from the main action momentarily, in order to show another segment of the same situation. For example, in a horse race sequence, the running of the horses is the main action—whereas, shots of the fans cheering their favorites from the stands are definitely cutaway shots. Because it is the natural tendency of an audience to forget details from scene to scene, short cutaway shots can cover sizable gaps in time and action. Thus, the first part of a horserace might be shot, and also the last part as the horses come into the home stretch. A few short cuts of fan reaction in between will satisfactorily bridge the gap in action, and incidentally save a great deal of the extra film that would have been needed to follow the entire race. Since reaction shots heighten an audience's response to a screen situation, they serve an important dramatic purpose, as well.

In the final analysis, then, the object of all this economy of film stock is not to make fewer movies, but to make more movies with less film. It's merely a matter of making your available film supply go farther and count for more in terms of footage that finally appears on the screen.

3-DIMENSION MOVIES

(*Continued from Page 307*)

second helped somewhat but it was soon realized that some other approach to the problem would be necessary. The Morgana shuttle movement proved to be the solution to the flicker problem. This unique movement was designed to eliminate the same sort of flicker in the two-color process. A search uncovered the existence of one of these mechanisms at the Bell & Howell plant in Chicago. It was procured and mounted on a Bell & Howell Show-Master projector.

The first film-driven polarizer attachment was re-geared to revolve at three times its former speed so as to correspond to the new framing speed of the Morgana movement. Previously while one eye was getting the benefit of three "flicks" the other had to wait through a period of 1/24 second. Now with the Morgana movement the fluxation of light, with respect to either eye, was uniform. The system which involves shuttling one frame backwards for every two forward, facilitates progression of the film through the projector at standard sound speed, and at the same time provides a flicker frequency of 72 frames per second, or 36 frames per second per eye.

Fig. 3 shows the final product in the evolution of the barrel polarizer. In Fig. 4 it is shown attached to the Bell & Howell Showmaster projector, which in turn is equipped with a Morgana movement. The polarizer in this case is powered through its gear train direct by the gear mechanism of the projector, and not by the film. This change was found to be necessary due to the lack of the film-driven model to stay in exact synchronization at the higher speed required with the Morgana movement.

The alternate frame principle offers certain advantages over the split image system. Both the right eye image as well as the left eye image, each occupy a standard full frame on the film. This feature provides for maintaining the quality standard for 16mm projection. The alternate frame principle also facilitates projection through a single undisplaced axis from the projector aperture straight to the screen. Because of this feature there exists no requirement to manually register the two images on the screen.

Registration, on the other hand is accomplished during filming or during processing and is accurately maintained in the film gate aperture of the projector and likewise on the screen. Effects which should result from calculated lateral image displacement are faithfully reproduced on the screen. In contrast the usual type of beam splitter displaces the axis of, and re-registers the stereo images separately. As a result the effects intended at the time of the photography are seldom accurately reproduced on the screen. In addition, and because of projectionist errors, vibrations, etc., the beam splitter system can be the cause of misregistration which in turn results in eyestrain. Unfortunately many believe, unjustly, that such eyestrain is characteristic of any and all three-dimensional pictures.

Although the Morgana movement accomplished wonders in solving the flicker problem it introduced a limitation in the allowable rate of action of moving objects. Any fast subject movement, especially laterally, appears considerably jumpy on the screen. The reverse shuttling feature of the Morgana movement, of course, is directly responsible. To be sure this new bug is troublesome, but it is not nearly as detrimental as was the flicker condition. (Patents are now being procured on an improvement which will eliminate this last remaining bug.)

Four different cameras have been adapted by the author for alternate frame stereo motion picture photography. With this equipment a wide variety of applications have been possible. It should be noted that the mission of the Stereo Sub Unit, WADC Photographic Service Section, Wright-Patterson Air Force Base, is to accomplish any type of stereo photography which it might be called upon to perform.

Sixteen-millimeter cameras which have been adapted for alternate frame stereo photography are: the Bell & Howell Filmo (Fig. 5), the Eastman High Speed, an Eastman High Speed with Graham transmission, and a Ciné Special. Each of the modified cameras listed now accomplish the requirement of exposing the right and left stereoscopic images on alternate full frames of the film.

Cameras equipped with barrel type shutters lend themselves conveniently to alternate frame stereo adaptation. In such cases the barrel type polarizer principle can be incorporated as an integral part of the shutter. A split polaroid filter on the lens of the camera then provides for alternate selection of the right and left views on each 180 degrees rotation of the shutter. The axis of polarization of either half of the split filter on the lens is 45 degrees to the vertical and opposed by 90 degrees. Since the axis of polarization of the filter in the shutter is also on a 45 degree diagonal it acts, together with the split filter on the lens, to alternately eclipse either half of the latter during each half revolution. Thus, when a beam splitter is centered in front of the lens, the displaced right and left views therefrom, entering their respective halves of the lens, are recorded selectively on alternate frames of the film. This method of selection is particularly advantageous in high speed work where, otherwise, a mechanical shutter selector would be impractical.

Both of the modified Eastman High Speed Cameras mentioned are equipped with a polaroid filter mounted in the barrel shutter compensator.

The compensator was specially constructed by Eastman Kodak Co. It contains a sheet of polaroid mounted between two optical glass plates. The refracting action of this optical assembly corresponds to the specifications of the standard Eastman high speed compensator. Since there are no additional moving parts involved in the high speed stereo adaptation, the camera can be operated at its maximum speed. There is one disadvantage in this system however, in that light equivalent to two lens-stops are lost through the polaroid filters.

Because of the simplicity of the optical selection of right and left images provided by the barrel shutter, one of the Eastman high speed cameras was modified to provide constant film speeds over a range from 1 to 176 frames per second. This was accomplished by powering the camera with a Graham transmission.

The beam splitter used in the attachment shown on the Bell & Howell camera in Fig. 5 provides a choice of either a 2½" interocular or a 6" interocular. The latter is used with either the four or six inch lens to maintain normal depth proportions. The six inch beam splitter is equipped with a parallax-free viewfinder which incorporates a half-silvered beam displacer. This feature provides a method of accurately registering the right and left beam splitter images with respect to the central viewfinder image. The actual registration of the separate images is accomplished by rotating the outer mirrors of the beam splitter. The rotation of the mirrors in effect converges or diverges the two viewpoints of the system in accordance to the effect desired when the film is screened.

At normal and slower speeds mechanical shutters can be operated and synchronized by the camera or other means.

Artist With Pen And Camera

This month, Emedio Angelo, better known simply as "Angelo," will interpret some of the doings of studio cinematographers with pen and ink for the American Cinematographer.

Angelo, whose famous cartoons appear daily in the Philadelphia Inquirer, Hollywood Citizen News, and numerous other dailies throughout the nation, is also an avid amateur movie maker. His 16mm color film, "Portrait of A Painter," won Honorable Mention in American Cinematographer's 1950 Annual Amateur Motion Picture Competition.

Angelo's interest in movie making began in the summer of 1927, while he was in Europe on an art scholarship. There he met the late Rex Ingram, who invited him to come and watch him make pictures at a Paris studio the next day.

Later he acquired a ciné camera and has been making 16mm amateur films ever since. His first effort was made jointly by Justin Herman, who today produces short subjects for Paramount Pictures in New York. Angelo did a stretch in the art department of Walt Disney Studio, on "Snow White," which served to whet his appetite further for movie making. Subsequently he met Lewis Jacobs, exponent of the Experimental Film, who gave him tremendous encouragement; and this influence is evident in Angelo's "Portrait of A Painter."

EMEDIO ANGELO—artist and amateur movie maker

His initial cartoon contribution, inspired by the filming of "The Greatest Show On Earth," appears on page 326 of this issue.

Referring to Fig. 5, the Filmo mechanism is coupled with a gear train which drives a 180 degree shutter out in front of the beam splitter. This shutter accomplishes the same task as the optical selectors do in the high speed cameras, i.e., the selective exposing of the right and left stereo images on alternate frames of the film.

Another type of mechanical selector was designed for use in time lapse photography. Here advantage was taken of the pulse timer which periodically actuates both a light circuit and the camera. A solonoid and step relay connected with the light circuit actuates a small oscillating shutter at every other impulse. The shutter is mounted on the lens and positioned over one of two apertures in a diaphragm also over the lens. Thus, on every other impulse the shutter oscillates to a position over the normally open aperture, causing the exposure to be made through the normally closed aperture. The apertures in this particular case have a displacement of 5/8", but can be expanded by placing a beam splitter in front of the shutter assembly.

35mm three-dimensional entertainment films, in the opinion of the author, could be produced today. A relatively simple modification could be made to present theater projectors to accommodate a special optical attachment designed to eliminate flicker, as well as to selectively polarize alternate full frames. This all-optical attachment, on which additional patents have been filed, will eliminate the need for any mechanical alteration to the film transport mechanism.

In view of the versatility of applications possible with the alternate frame technique, and in view of the full frame quality possible therewith, this system may prove to be a practical as well as a valuable medium of synthesizing natural vision.

DESERT SUNRISE

(Continued from Page 315)

distant mountain where the sun would first be seen.

Camera all set and composition complete, I started to making single frame exposures at one-second intervals fifteen minutes before sunrise.

I spent the next seventeen minutes counting off seconds and making single-frame exposures. First the blue and purple light of early dawn came before my lens. And there was a small patch of surface fog in the distance that tried to hide behind a hill only to be absorbed by the warmth generated by the oncoming light. Ten minutes later my right thumb was still operating the

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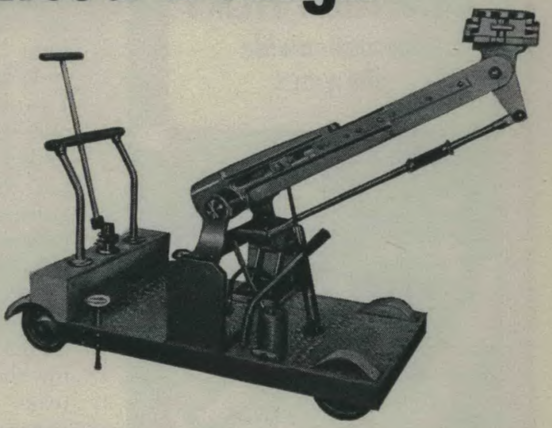

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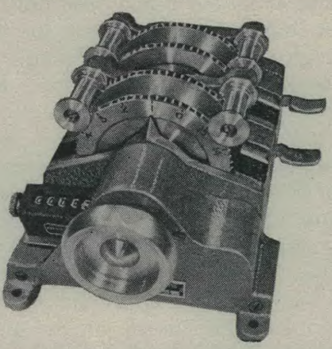

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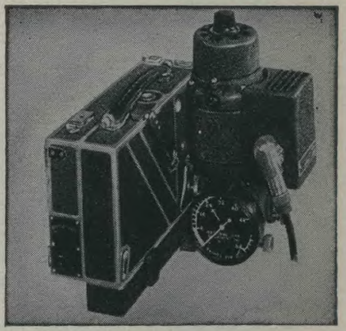

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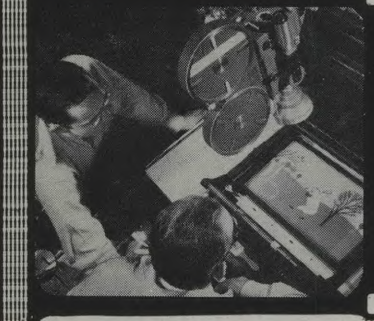

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single frame exposure button as the eastern sky gradually changed from a bluish yellow to a glowing orange. Three minutes before sunrise the sky was a flaming red. My thumb was still working the exposure button as a beautiful ball of fire emerged from behind a distant mountain peak and flodded the desert valley with its early-morning light.

With the sunrise sequence completed, I turned the Bolex around one hundred and eighty degrees and saw through the finder the desert highway as it curved out of the mountains. At this early-morning hour the long shadows of the hill went almost down to the road but left the white flower of a tall Yucca plant in bright sunlight. The white flower and long shadow of the hill served as the foreground and lead-in for the picture. The camera was made ready for sixteen frames per second exposure. As this was the desert during its first hour of sunlight, it seemed a natural follow through shot from the sunrise exposure I had just finished. So I let more than ten feet of film go through the camera and a couple of cars go by on the highway below, for this shot.

Upon leaving the desert an hour and a half later, I came to a long stretch of road that seemed to bounce over a couple of little hills and disappear in the mountain passes beyond.

This was the road back home. The sun was now well up in the sky and the desert had lost much of its pre-dawn glamour. With the Bolex set up along side the car, I exposed several feet of film at eight frames per second while highway traffic rushed by.

This eight frames per second exposure would speed up the action and the pictorial result would tend to give the impression that getting speedily out of the hot desert at this time of the day was a wise decision. **END**

RCA RECORDER

(*Continued from Page 310*)

Identical magnetic heads of the low impedance type are used for recording and playback. They are mounted within a mumetal box to insure shielding.

The track width of 0.200", centered 0.399" from the outer film edge, is in keeping with the Academy recommendations. Flutter of only .04 percent rms total and a signal-to-noise ratio of 57 db have been attained. The frequency characteristics is plus or minus 1 db in the range from 30 to 10,000 cycles. Overall dimensions of the recorder-reproducer unit are 21¾" high, 23½" wide, and 13" deep. Net weight is 100 pounds.

The recording amplifier assembly consists of a mixer amplifier, a recording amplifier, and a bias oscillator for recording, and an oscillator-pre-amplifier and equalizer for playback operation. Controls include a bias oscillator control and meter, and a selector switch for "off," "record," or "playback," all easily accessible on the front panel. A double jack for monitor headphones is provided. The unit weighs 66 pounds and is 16½" high, 20½" wide, and 13¾" deep.

The two-channel mixer amplifier unit has input impedances of 250 or 300 ohms, and a frequency range of 30 to 10,000 cycles. Controls on the panel include indicator microphone controls for channels 1 and 2, a five-position low-frequency attenuator control for each channel, a range switch for the volume indicator, and a switch for the self-contained test oscillator. This equipment is 9½" high, 12½" wide, 10½" deep, and weighs 27 pounds.

The self-contained high-and-low voltage power supply operates from any 110 or 220 volt, 60-cycle source. The power supply weighs approximately 104 pounds and measures 19¾" high, 17½" wide, and 10¼" deep.

In addition to the magnetic recording equipment described above, RCA has recently announced a new triple track magnetic channel for motion picture studio sound recording departments and for sound recording laboratories. This new RCA equipment makes it possible to record three different sound tracks on a single 35mm film, simultaneously or at different times. This makes it possible to put all three dubbing masters on a single

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film with consequent marked reduction in raw-stock costs, not to mention the savings in storage space.

The equipment also makes possible putting multiple-channel music scoring on a single film, providing immediate playback from any or all three tracks. The individual tracks may be erased selectively. The equipment is already in use at Warner Brothers' and Columbia Studios in Hollyood who, with Paramount Pictures, have been among the first of the Hollywood Studios to undertake a complete changeover in sound recording from optical to magnetic film systems.

RCA magnetic recording equipment, of course, is also in use in other film production centers besides Hollywood. Chicago Film Laboratory, Chicago, has been using the equipment for sometime as has DeFrenes and Co., Philadelphia. Among others are: National Broadcasting Co., Hollywood; Mode-Art Pictures, Inc., Pittsburgh, Pa.; Reeves Sound Studios, Inc., New York City; Video Varieties Corp., New York City, and Nat'l Film Board of Canada.

The full range of equipment is on display at RCA's Victor Division offices in Camden, New Jersey, N. Y. City, and its west coast offices in Hollywood, Calif.

SHOWBOAT

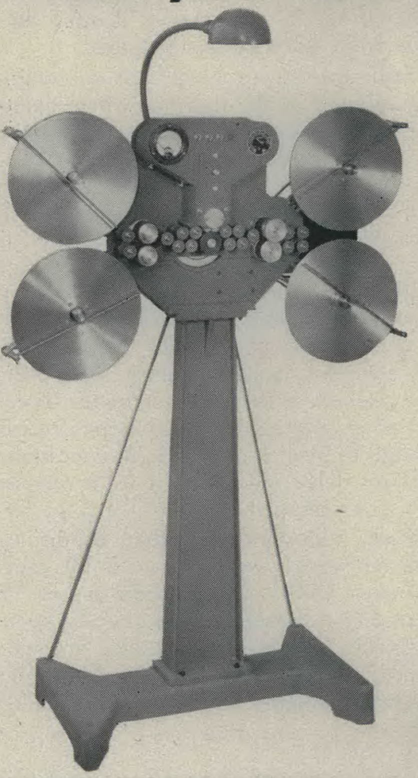
(*Continued from Page 305*)

Whenever I showed enthusiasm for some particularly colorful or artistic effect in an illustration, Rosher would make a mental note on how to adapt it to some particular scene in "Showboat." I think this is best exemplified in the sequence of shots of William Warfield singing "Ol' Man River," which was actually filmed at dawn, in real fog. The low key result is a masterpiece in color cinematography.

There are a number of scenes in the picture, incidentally, where fog played a dominant part, pictorially. We took advantage of the fact we were producing this picture in December in Culver City, not far from the Pacific ocean, and used the naturally foggy atmosphere for these scenes. Frequently the natural fog in scenes was amplified through skillful use of filters or by addition of artificial fog.

Sometimes, having started to shoot a sequence of scenes under foggy weather conditions, we ran into serious trouble. The fog would lift suddenly and the sun would come out. This called for one of three alternatives: to employ artificial fog and filters, go indoors on the sound stage, or move to another exterior location that called for shooting in full sunlight.

Fog, being an elusive thing, became



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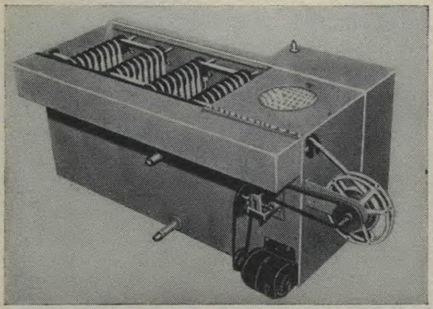

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one of our major bugaboos when shooting exteriors on the studio's lot three. It moved in clouds of varying density, creating troublesome exposure problems. We frequently had to depend on constant visual checks of the light, so rapidly did light quality fluctuate. Strict attention to this detail enabled the cameraman to retain remarkable density balance from one shot to the next.

Still another problem was maintaining balance in the lighting when shooting a sequence of fog scenes over a period of days. No two days were alike in light quality. It thus was necessary to keep in mind the light conditions that prevailed each preceding day in order to match it and insure the desired continuity of light quality and direction. As every cameraman knows, it is relatively simple to shoot in normal sunlight; but battling the elements calls for more than ordinary camera skill. The successful director of photography must be resourceful enough to meet changing light conditions without delay, no matter how severe or how frequently they occur.

Such mid-winter weather conditions demonstrated how important is the cameraman's ability to maintain a sort of mental encyclopedia of detail from scene to scene, where such scenes are not filmed consecutively. He must have an infallible memory for the quality, color temperature and direction of the source of light. For instance, we were shooting the picture in December; days were short. There were days that dawned foggy or extremely cloudy, forcing us to go indoors and shoot on the sound stage. Then the sun would come out suddenly, and because sunshine was such a precious commodity for the vast number of exteriors we had to shoot, we would halt indoor shooting and move out of doors again, shooting until color temperature of the light went below the point where it could be balanced satisfactorily. Then we'd go back indoors, only to find, perhaps, that one of the cast was unavailable; so we would then switch to another set. Two weeks later, we would return to the first set and resume shooting there. It was Rosher's uncanny ability to remember all the camera and lighting details of the original setup that enabled the company to resume shooting as though there had been no interruption. The subsequent takes matched exactly in lighting continuity and quality those made the day shooting first started on the set.

There are two things in which Rosher excels, which make his photography a dominant factor in every picture he shoots: his scrupulous attention to continuity of lighting direction from one shot or sequence to another, and his constant vigilance over the color temperature of set illumination. We both agree

Greatest Lamp For Greatest Show

THE SPECTACULAR circus "tear down" sequence in Cecil B. DeMille's Paramount picture, "The Greatest Show on Earth," was filmed under the light of two of the greatest incandescent lamps in the world.

Use of the 50,000-watt giants under the big top of Ringling Bros. and Barnum & Bailey Circus marked an important departure from the standard lighting techniques practiced on color sets of the movie-making industry.

Fire hazards in the tent and surrounding areas were such that arc lamps, customarily used to shoot indoor scenes because of their great intensity, had to be ruled out.

So Paramount's lighting engineers substituted the two huge General Electric bulbs—each as bright as a thousand 100-watt lights of the household variety—together with banks of other incandescents.

It was the first practical application to be found for the big bulbs since they were developed for "Light's Golden Jubilee" in 1929 and the first large scale application of this type of lighting.

DeMille estimated the incandescent system to be four times more effective than any equipment which he had previously employed to illuminate large indoor areas.

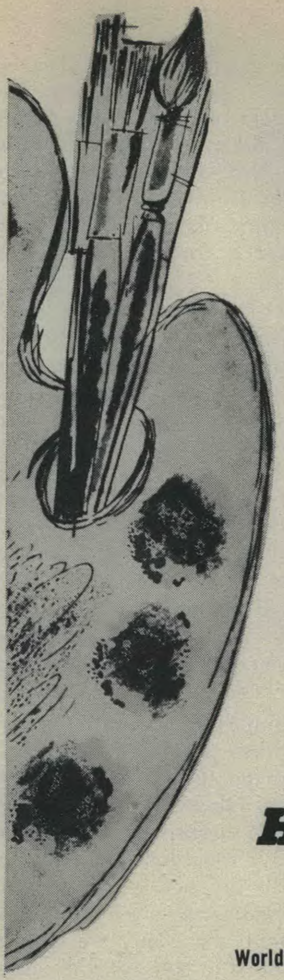
JUMBO "INKY"—Gloria Graham, blonde star in Cecil DeMille's "The Greatest Show On Earth," holds one of giant incandescent lamps used in lighting production.

that the whole future of color photography is bound up with color temperature, that it is a most important factor in color cinematography, affecting as it does the purity and consistency of color rendition. It is necessary for cameramen to know this when shooting color if skies are to match from scene to scene, and faces and complexions of players are to remain constant from one scene to the next. I think "Showboat" is outstanding for these very consistencies.

Consistency in facial renditions were achieved without resorting to overlighting by reflectors or booster lights. A notable example is the scene, early in the picture, where Howard Keel and Kathryn Grayson, singing together on the upper deck of the showboat, move about—sometimes in partial shadow and then in full sunlight. Also, later in the picture, when Ava Gardner is singing "Can't Help Lovin' That Man" on the afterdeck. She moves from one side of the boat to the other — in and out of sunlight — and there is no appreciable change in her facial rendition, photographically, due to skillful maneuvering of the lighting. These scenes particularly demonstrate what is becoming more and more self-evident: that candid-type photography has at last come into its own in cinematography—candid in that there is more realism in the result, less of the "forced" photographic effect.

Many of the memorable camera treatments in the picture were conceived right on the set or location. From a compositional viewpoint, one of the most impressive is the shot of Howard Keel walking along the river's edge. The camera, slightly elevated, looks down on Keel and shows reflections of the gaily decorated showboat in the water behind him—an impressive and colorful backdrop. It was one of those opportunities for pictorial emphasis which was developed to the fullest.

Another example occurs early in the picture. One of the crew, after being severely beaten by Robert Sterling for forcing his attentions on Ava Gardner, leaves the showboat in a rage and goes up the river bank in search of the sheriff. This could have been an ordinary shot made from a simple camera setup on the crest of the river bank, picking up the man as he trudged up the hill. But we saw opportunity to gradually heighten the effect of the man's anger through pictorial emphasis that would make him loom larger as he approached the camera. Dolly tracks were laid from the crest of the hill, extending out toward the boat on a scaffolding, and paralleling the uphill path. The Technicolor camera, mounted on a movable crane, was set to start the shot from the far end of the track—nearest the boat. As the man left the boat below, the camera was



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started and the crane pulled back; meanwhile, the boom was gradually lowered until the camera now was below the level of the dolly tracks, almost at ground level. Here it looked up at the raging boatman looming ever larger, and at the same time showed the boat in the distance for a unique compositional effect.

One of the classic shots in the entire picture is one we filmed on location on the Mississippi river. Prior to starting the picture at the studio, Rosher and I went to Vicksburg, Mississippi, to shoot scenes of the river packet on which Howard Keel and Ava Gardner meet again, in the latter part of the story. On an earlier location-scouting trip I had located the "Sprague," an ancient river boat tied up at a wharf, where it now served as a museum. More than 300 feet in length, it was just the prop we needed; so arrangements were made with the owners to use it for the picture.

The most important shot for which it was required was a scene—a long shot—showing it moving up the river at dusk, its cabin lights ablaze and passengers promenading its decks. Now this shot easily could have been done in miniature, but needless to say not with the same authenticity. Inasmuch as the cost would have been about the same, we decided to make the shot the way we did—using the real boat on the Mississippi.

A 300-amp generator was installed temporarily on the craft to supply power for the lamps that were to furnish illumination behind the windows. The boat's steam plant long ago having been sold for junk, it was necessary to provide temporary motive power. Two tugboats were made fast to the packet on the side opposite that which was to face the camera, to move it upstream while we made the shot.

Hundreds of photoflood lamps were used to supply light back of the windows. Because it was necessary to secure every available foot-candle of light the lamps would give, in order to make the boat's interior appear brilliantly lighted, the lamps were mounted directly behind tracing cloth panels tacked over the boat's open windows. The lamps were placed so that the filament of each was directed as near as possible at the lens on the camera, (which was set up on another boat some distance away) and with the filament at the same height as the camera lens. Only by doing this was it possible to secure the maximum volume of illumination from each lamp.

To obtain the desired pictorial result, Rosher calculated that the scene would have to be shot at precisely a certain time after sundown. It couldn't be ten minutes too soon or too late. On the previous evening he had made an exposure test at twilight to determine the correct balance between the artificial light, coming from the boat, and the waning daylight.

On the following evening, when the scene was to be filmed, there was no time for rehearsals. The reason for this was that the artificial light coming from the windows of the boat had to be the dominant light in the scene, yet exposure had to be ample to give a clear outline of the boat in the dusk, and consequently a rich print. The whole operation, once ready to shoot, required about ten minutes time—ten tense, anxious moments

"Hello! A.S.C.? Send me two more cameramen—LEAN ONES!"

for all of us. No process shot could have equalled the result. It is truly a masterpiece of color photography.

In the beginning, we had considered shooting the showboat exteriors on location on the Mississippi. However, after long and careful search, which took us from New Orleans to Cincinnati, two things became apparent: there was not a boat on the entire river which met all our requirements and, most important, the Mississippi river currents were such that operating camera and lights from other craft on the river would have been almost impossible. So we decided to have the showboat built on the studio's back lot. The finished craft, named the "Cotton Blossom," is the largest movable prop ever built on a Hollywood motion picture lot. It floats lazily on the lake in MGM's lot number three, awaiting future assignments.

Whereas shooting scenes on a boat on the Mississippi would have entailed lighting problems—and the inability in many cases to maintain directional lighting continuity — with the studio built boat we were able to keep this factor under absolute control, simply by moving the boat and following the sun around as necessary.

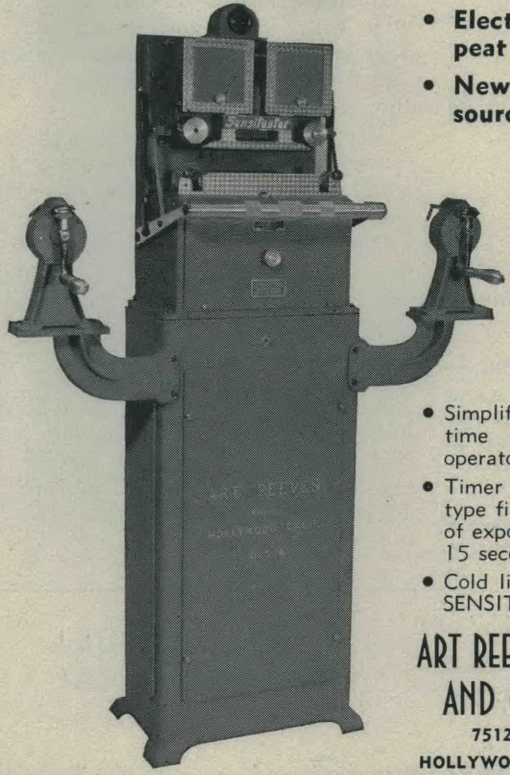
When construction of the boat was completed and the painters had finished decorating it, the result was a sparkling new boat just off the boatmaker's ways, instead of a weatherbeaten Mississippi river boat. Studio painters then applied "weathering" to its entire exterior and the photographic result is everything that could be desired. This is but one example of the myriad of details which Rosher constantly surveyed from the photographic viewpoint, directing such changes or improvements as were necessary to achieve the photographic excellence for the production that was our constant aim.

While the photography of the vast number of exteriors involved the most interesting experiences, the interiors demanded no less attention from the camera viewpoint in planning and lighting. Perhaps it was because we had held many pre-production huddles with the art director on wardrobes and set decorations that camera problems on the interior sets were greatly minimized. Care had to be taken against having costumes too somber in tone, yet not garish, either — so they did not merge and become lost in the background. There must be good color separation always between subjects and background to get the most pleasing effect in color cinematography. In this respect, we utilized a lighting trick worth noting. After the key light had been established, an additional light source was directed on other objects or on the background itself in order to gain the desired compositional effect. This is something that rarely can be determined by meters—one has to have it in him, intuitively.

Photography, I believe, has now become so popular, audiences have come to expect better camera work on the screen. That is why we made it a point to be so meticulous with the photography of "Showboat." Having educated the public to expect the best in photography, we now have to keep ahead of them. I think we can say in all honesty that, because of all this, we are constantly improving the tastes of the people of the world, influencing their dress, makeup, their manners and also the graphic arts.

Being ardently interested in photography has brought me in closer understanding with the director of photography's problems, and from this has stemmed an invariable practice of con-

(*Continued on next page*)



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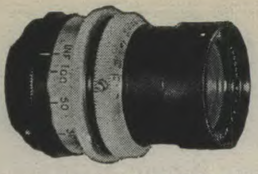

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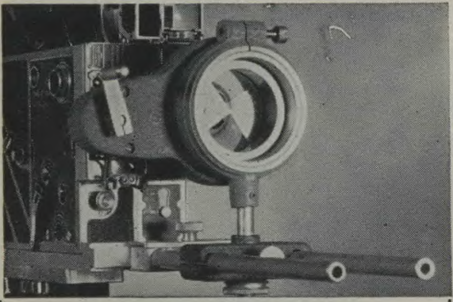

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sulting at great length with him during the course of preparing a picture for production.

I like to think of "Showboat" as an example of the point I have often made that when a director and his cameraman both speak and understand the same language—the language of photography—superior motion pictures invariably result.

We often hear applied the appellation "cameraman's director"—meaning a director who works harmoniously with a cinematographer. Conversely, I think Charles Rosher is the epitome of the director's cameraman. His tremendous experience and wealth of photographic knowledge, his personal "bag-of-tricks," and his ceaseless enthusiasm and dogged perfectionism are qualities which contributed to the standout photographic job of "Showboat." His complete integrity as a gentleman and scholar has earned for his the respect, love and admiration of all who have the good fortune to know him.

CAN'T ARGUE WITH CAMERA!

(*Continued from Page 308*)

was eliminated and a Veeder-Root digit counter substituted in its place. This eliminated the tiresome use of the crank in counting the frames exposed for each element of the job. (Editor's note: this change is now standard on all Bell & Howell time and motion study projectors.)

The lenses on such a camera are an important factor in getting proper recording on film of the operation to be studied. The new, modern Bell & Howell lenses with T-stop calibrations are ideal for this. Thus, on the camera I use for this work is the following combination of lenses which enables me to get best pictorial results at any angle without changing position of the tripod. This helps immeasurably in reducing the disturbance by the camera operator.

*(a) 0.7" f/2.5 B&H wide angle Super Comat lens in focusing mount (for full scope of area).
*(b) 1" f/1.9 B&H Super Comat (Standard) lens in focusing mount (for medium angle shots.)
*(c) 2" f/1.4 long focal length TTH Ivotal lens (for special angle shots).
**(d) 4" f/4.5 B&H long focal length Telate lens (pin-points single part of operation).

*—On turret permanently.
**—Replace the 2" lens with the 4" for (d).

The usual practice is to set the camera, mounted on tripod, at approximately twelve to fifteen feet away from the center of the "motion path" of the operation. With the use of the above lenses it is possible to position the camera at an angle whereby all sequences of an operation may be filmed without having to make frequent adjustments or to reposition the camera, which would cause a disturbance to the operator on the job being studied.

Lights, too, must be carefully placed for the same reason. I find the Colortran lighting equipment ideal for this purpose. We invariably use a Colortran "5000" kit for lighting a normal operation procedure. It would be impractical if not impossible for us to use two 5000-watt floodlights on a power line fused for 30 amps. The Colortran "5000" kit affords the same light volume on the same current and fusing with perfect safety. The two Colortran light heads give 5000 watts of light each. Each head holds five R38 flood lamp bulbs which are good for about 20 hours of lighting use.

The following technique is the standard filming practice established in our industrial engineering department for time and motion study:

(1) Each subject or operation is carefully studied before establishing the camera setup.

(2) Analysis of operator's motion path is made (area in which work is done) so best shots of motion path can be taken from one location without encountering obstructions.

(3) Camera and lighting equipment is set up. Illumination requirements are checked with light meter, and a check made of subject-to-camera distances and the camera lenses set accordingly.

(4) Lights are turned on and subject-operator proceeds with operation for a "dry run" of the procedure (without the camera turning). In this manner, if operator freezes, lights are left on and we talk to him, thereby easing him until the motion path is correct. The camera is then started to complete the film study.

Briefly, the equipment we use in making and evaluating such time motion studies on film are as follows:

(1) The previously described Bell & Howell model 70-H magazine camera with turret head, electric motor drive and with speed dial re-calibrated.

(2) G-E or Weston light meter.

(3) The T-stop calibrated lenses previously mentioned.

(4) Eastman blue-base film Super-XX film in 200 and 400-foot rolls.

(5) The Colortran lighting equipment.

(6) Bell & Howell time study projector with frame counter.

(7) A 40 x 60-inch beaded screen, also a shadow box fitted with 12 x 16-inch beaded screen.

Color film is employed only when the film is to be used for training purposes.

We have found that the blue base film makes checking and studying the screened films easy on the eyes. Also, it is possible to have this film processed locally in two hours.

In photographing a new job for analysis, the complete operation is first photographed, using wide angle lens for the entire record. This shot is used to time the operation. The operation is then re-photographed and the longer focal length lenses used to break the operation down into its various parts for closer study. In general, when the operation is wholly performed by a man without machine, the camera is run at 4,000 frames per minute. This gives us a record which permits a very detailed study to be made. Where the operation consists of 50% manual work and 50% machine work, the camera is operated at 2,000 f.p.m. When the operator's part is 25% and the machine does 75% of the job, the camera is operated at 1,000 f.p.m., since this gives enough detail to adequately study the job.

We have thus developed our method and time studies by use of the motion picture camera and projector to the point where we can prove visually to the employee or the Union that the method is practical and the rate of pay accurate for the operation or job—a picture of the exact process in the exact time that it requires in performance.

SHOOTING NEWS FILMS

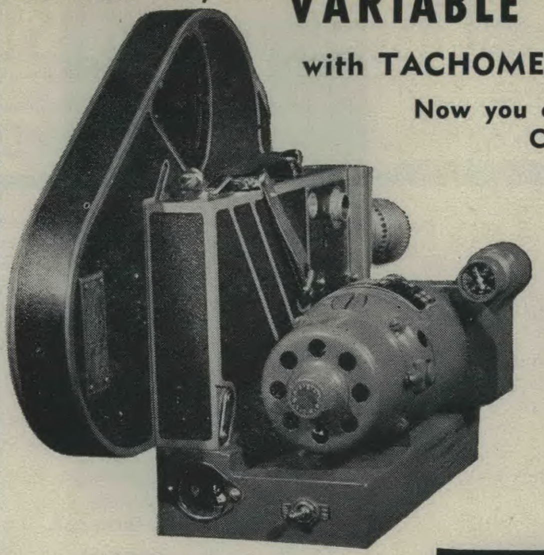
(*Continued from Page 313*)

station wanted coverage for its 10 p.m. newscast.

There was no one else available at the studio that I could take along as an assistant to make notes and shoot stills, so I picked up my wife, who's no mean photographer herself, and off we went bucking five o'clock traffic for fifty miles. Of course word had spread of the disaster and the roads were choked with sightseers. When we got as close as we could with the car, we parked it and set out on foot for the rest of the way. There were the usual interruptions for identification, as we encountered local and state constabulary. Some of the officers were hesitant and, remembering that we had not driven the fifty tortuous miles just for the scenery, we had to be firm and ready to resort to skullduggery, if necessary, in order to reach the scene of the disaster.

Remembering that closeups tell the story, I began to reconstruct the crash. After a couple of location establishing shots, I moved in with the camera to pictorialize the path of the crashing plane. Vivid shots of trees stripped of branches by the ill-fated plane, spilled

(*Continued on Page 331*)



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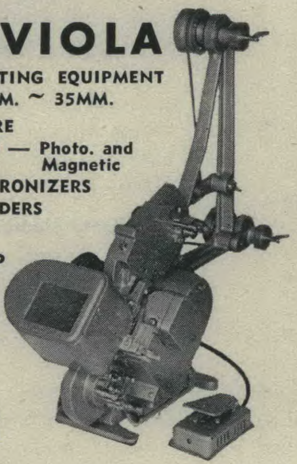

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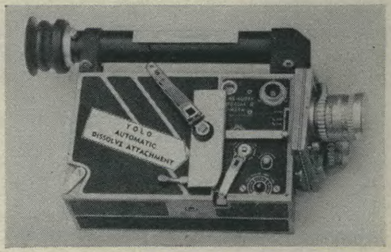

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Current Assignments of A.S.C. Members

Major film productions on which members of the American Society of Cinematographers were engaged as directors of photography during the past month.

Columbia

- Charles Lawton, "Boots Malone," with William Holden, Johnny Stewart, Stanley Clements, Basil Ruysdael and Bill Pearson. William Dieterle, director.
- Ellis Carter, "The Thief of Damascus," (Technicolor) with Paul Henried, John Sutton, Jeff Donnel, Elena Verdugo and Helen Gilbert. Will Jason, director.
- Fayte Brown, "Smoky Canyon," with Charles Starrett, Smiley Burnette and Jack Mahoney. Fred Sears, director.
- Fayte Brown, "The Hawk of Wild River," with Charles Starrett, Smiley Burnette and Jack Mahoney. Ray Nazarro, director.

Independent

- Jack Cardiff, "African Queen," (Horizon Prod., shooting in Belgian Congo, in Technicolor) with Humphrey Bogart, Katherine Hepburn and Robert Morley. John Huston, director.
- Ernest Laszlo, "Mutiny," (King Bros. Prod.) (Technicolor) with Angela Lansbury, Mark Stevens, Gene Evans and Patric Knowles. Edward Dmytryk, director.
- George Robinson, "Jack and The Beanstalk," (Exclusive Prod., in Technicolor) with Bud Abbott, Lou Costello, Buddy Baer, Shayne Cogan, Jim Alexander, Dorothy Ford, Barbara Brown and Wm. Farnum. Jean Yarbrough, director.
- Paul Ivano, "Thy Neighbor's Wife," (Hugo Haas Prod.) with Hugo Haas, Cleo Moore and Ken Garcia. Hugo Haas, director.

M-G-M

- Harold Rosson, "Lone Star," with Clark Gable, Ava Gardner, Broderick Crawford, Lionel Barrymore, Beulah Bondi, Moroni Olson, William Farnum and James Burke. Vincent Sherman, director.
- Robert Surtees, "The North Country," (Technicolor) with Stewart Granger, Wendell Corey and Cyd Charisse. Andrew Marton, director.
- Ray June, "Just This Once," with Janet Leigh, Peter Lawford, Lewis Stone and Richard Andreson. Don Weis, director.
- Harold Rosson, "Singin' In The Rain," (Technicolor) with Gene Kelly, Debbie Reynolds, Donald O'Connor, Jean Hagen, Millard Mitchell and Douglas Fowley. Gene Kelly and Stanley Donen, director.
- Robert Planck, "Belle of New York," (Technicolor) with Fred Astair, Vera-Ellen, Keenan Wynn and Alice Pearce. Charles Walters, director.
- Paul Vogel, "County Line," with Walter Pidgeon, John Hodiak, Audrey Totter, Paula Raymond, Cameron Mitchell, Thomas Gomez. Gerald Mayer, director.
- William Daniels, "When In Rome," (Shooting in Italy) with Van Johnson, Paul Douglas and Joseph Calleia. Clarence Brown, director.
- John Alton, "The Enemy," with George Murphy, Nancy Davis, Lewis Stone and Billy Gray. David Bradley, director.

AMERICAN SOCIETY OF CINEMATOGRAPHERS

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Monogram

- William Sickner, "Blue Fin," (Lindsley Parsons Prod.) with Wayne Morris, and Damian O'Flynn. Frank McDonald, dictor.
- Ernest Miller, "Vengeance Trail," with Wild Bill Elliott and Peggy Stewart. Lewis Collins, director.
- William Sickner, "Joe Palooka in Hitchhike Killer," with Joe Kirkwood, Cathy Downs and James Gleason. Reginald LeBorg, director.
- Harry Neumann, "Fort Osage," (Color) with Rod Cameron, Jane Nigh and Douglass Kennedy. Leslie Selander, director.
- Ernest Miller, "Ride 'Em Cowboy," with Whip Wilson, Pamela Duncan, Jim Bannon and Fuzzy Knight. Lewis Collins, director.

Paramount

- John Seitz, "Warbonnet," (Technicolor) with Charlton Heston, Peter Hanson, Joan Taylor, Susan Morrow, Richard Rober, Don Porter, Ian MacDonald, Ted de Corsia, George Marshall, director.
- Daniel Fapp, "Anything Can Happen," (Perlberg-Seaton Prod.) with Jose Ferrer, Kim Hunter, Kurt Kasznar, Eugenie Leontovich. George Seaton, director.
- Ray Rennahan, "The Denver & Rio Grande," (Nat Holt Prod., Technicolor) with Edmond O'Brien, Sterling Hayden, Dean Jagger, Lyle Bettger, J. Carrol Naish, and Zasu Pitts. Byron Haskin, director.
- Loyal Griggs, "Shane," (Technicolor) with Alan Ladd, Jean Arthur, Van Heflin, and Brandon de Wilde. George Stevens, director.
- Lionel Lindon, "Green Gold of Nevada," (Pine-Thomas Prod., in Technicolor) with John Payne, Susan Morrow, William Demarest, gnes Moorhead and Roscoe Ates. Edward Ludwig, director.

R.K.O.

- Nick Musaraca, "A Girl In Every Port," with Groucho Marx, Marie Wilson, Bill Bendix, Don DeFore, and Teddy Hart. Chester Erskine, director.
- Harry Stradling, "I Want You," (Goldwyn Prodn.) with Dana Andrews, Dorothy McGuire, Farley Granger, Peggy Dow, Robert Keith, Mildred Dunnock, and Ray Collins. Mark Robson, director.
- Paul Ivano, "3000 A.D." (Amer. Pictures Prod.) with Robert Clarke, Margaret Field, Ron Randall, Gloria Saunders, Chill Williams, William Schallert. Stuart Gilmore, director.
- George Diskant, "Day Without End," (Filmakers Prod.) with Ida Lupino, Robert Ryan, and Barbara Whiting. Harry Horner, director.
- Russell Harlan, "The Big Sky," (Winchester Prod.) with Kirk Douglas, Dewey Martin, Eliz. Ttreat, and Buddy Baer. Howard Hawks, director.

Republic

- Winton Hoch, "The Quiet Man," (Technicolor) with John Wayne, Maureen O'Hara, Barry Fitzgerald, Victor McLaglen and Ward Bond. John Ford, director.

20th Century Fox

- Charles G. Clarke, "The Golden Girl," (Technicolor) with Dennis Day, Mitzi Gaynor, Dale Robertson and Una Merkle. Lloyd Bacon, director.
- Joe MacDonald, "Viva Zapata," with Marlon Brando, Jean Peters, Margo, Anthony Quinn, Arnold Moss. Elia Kazan, director.
- Milton Krasner, "The Marriage Broker," with Jeanne Crain, Scott Brady, Thelma Ritter, Michael O'Shea, Zero Mostel and Frank Fontaine. George Cukor, director.
- Lionel Lindon, "East Is East," (Jos. Bernhard Prod.) with Don Taylor, Cameron Mitchell, Yoshiko Yamaguchi and Marie Windsor. King Vidro, director.
- Harry Jackson, "Lydia Bailey," (Technicolor) with Dale Robertson, Ann Francis, Charles Korvin, and William Marshall. Jean Negulesco, director.

- **Leon Shamroy**, "With A Song In My Heart," (Technicolor) with Susan Hayward, Rory Calhoun, Thelma Ritter, David Wayne and Max Showalter. Walter Lang, director.
- **Charles G. Clarke**, "Red Skies Of Montana," (Technicolor) with Richard Widmark, Constance Smith, Richard Boone and Jeff Hunter. Joseph Newman, director.
- **Joseph LaShelle**, "Elopment," with Clifton Webb, Anne Francis, Charles Bickford, Reginald Gardiner and Evelyn Varden. Henry Koster, director.
- **Karl Struss**, "Rose of Cimarron," (Alperson Prod.) (Technicolor) with Jack Buetel, Mala Powers, Bill Williams, and Lillian Bronson. Harry Keller, director.
- **Lucien Ballard**, "Fixed Bayonet," with Richard Basehart, Michael O'Shea, and Gene Evans. Samuel Fuller, director.
- **Leo Tover**, "Pride of St. Louis," with Dan Dailey and Joanne Dru. Harmon Jones, director.

Universal-International

- **Cliff Stine**, "Week-end With Father," with Van Heflin, Patricia Neal, Richard Denning, Gigi Perreau, Virginia Field, Jimmy Hunt, Janine Perreau, and Tommy Rettig. Douglas Sirk, director.
- **Russell Metty**, "The Treasure of Franchard," (Technicolor) with William Powell, Julia Adams, Charles Drake, Rosemary deCamp, Tommy Ivo and Chubby Johnson. Ted Tetzlaff, pirector.
- **Charles Boyle**, "Battle of Apache Pass," (Technicolor) with John Lund, Jeff Chandler, Beverly Tyler, Susan Cabot, John Hudson, Bruce Cowling. George Sherman, director.
- **Maury Gertsman**, "Meet Danny Wilson," with Frank Sinatra, Shelly Winters and Alex Nicol. Joseph Pevney, director.
- **Irving Glassberg**, "Here Comes The Nelsons," with Ozzie Nelson, Harriet Nelson, David Nelson and Ricky Nelson. Frederick de Cordova, director.
- **Irving Glassberg**, "Bend Of The Snake," (Technicolor) with James Stewart, Arthur Kennedy, Julia Adams, Rock Hudson, and Lori Nelson. Anthony Mann, director.

Warner Brothers

- **Wilfred Kline**, "Bugles In The Afternoon," (Cagney Prod.) with Ray Milland, Helena Carter, Hugh Marlowe, Barton MacLane and James Millican. Roy Rowland, director.
- **Edward B. DuPar**, "The Tanks Are Coming," with Steve Cochran, Eve Miller, Philip Carey, Paul Picerni and Eugene Baxter. Lewis Seiler, director.
- **Ted McCord**, "Starlift," with Virginia Mayo, Doris Day, James Cagney, Ruth Roman, Gordon MacRae, Gene Nelson, Patricia Wymore, Janice Rule, and Dick Wesson. Roy del Ruth, director.
- **Robert Burks**, "Come Fill The Cup," with James Cagney, Phyllis Thaxter, Raymond Massey, James Gleason, Gig Young, Charlita, and Larry Keating. Gordon Douglas, director.
- **John Boyle**, "Carson City," (In color) with Randolph Scott, Raymond Massey and Richard Webb. Andre de Toth, director.
- **Ted McCord**, "I'll See You In My Dreams," with Doris Day, Danny Thomas, Frank Lovejoy and Mary Wickes. Michael Curtiz, director.

SHOOTING NEWS FILMS

(Continued grom Page 329)

radio gear at the base of a tree, a microphone dangling from a nearby branch, a broken doll and a charred storybook—these shots and others told graphically something of the horror of those last moments following the crash.

I came upon the engine that was ripped loose from its moorings—it had a cylinder missing. Where was the missing cylinder? Closer inspection showed inside of the engine badly damaged. Could this have been the cause of the crash? These details were photographed carefully and notes made for guidance of the script editor. This proved of immense value later, for ultimately official investigators concluded that the engine did fail in the air and that the cylinder was blown off before the crash. Here, on film, was evidence of the cause of the ill-fated crash.

It was after seven o'clock when, our shooting ended by darkness, we returned to the car and started back to the station —honking the horn and jamming on the brakes incessantly as we weaved in and out of traffic, which seemed unusually slow at the time. By nine p.m. we rolled up to the station door—just an hour before air time. We had put in a call on the road, alerting the station we were on the way in with film. The processing tanks were ready to go and the darkroom was a beehive of activity for the next half hour.

Twenty-five minutes 'til air time. The news editor has secured some additional information from the wire services. He already has our notes, which proved more accurate and embracing in data. With this material he goes to work on the narration. Ten minutes before air time, the film comes off the drier and is ready for projection. The editor screens the stuff as we watch excitedly and give additional facts about the disaster. The editor checks his copy as the film unfolds. Five minutes 'til air time. The film is projected again. No time for cutting, except to switch the last shot to the opening. Meanwhile the station's supervising director is getting worried. With just two minutes to go, the film and narration is handed him and made ready for airing. Meanwhile, we have made a check of the competitive stations and find that up to the moment they have not come on the air with pictures of the crash. Later, we learned that they did finally get on the air with pictures at midnight. We had gotten under the wire again!

It might be well to describe the equipment used on these assignments. We use a Cine Special with a fast one-inch f1.9 lens; also on the turret is a telephoto

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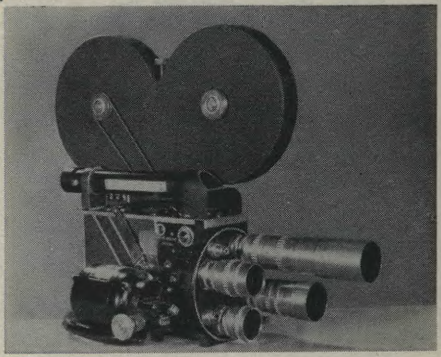

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lens, and in my carrying case is a wide angle lens. The camera operates at speeds from 8 to 24 fps. Thus when the light is poor, I can still get acceptable shots with the lens wide open and the camera set at the slower film speed of 8 or 12 fps. Night scenes of fires can be filmed very successfully at either speed. The film used is blue base stock and can be processed to a negative only and give good results when projected on the pick-up tube. This film is available from Eastman Kodak Company in two popular emulsion speeds. Extra rolls are always carried for an emergency.

Interesting is the fact we have discovered that the Super X blue base film can be "cooked" (overdeveloped) to the point where a usable image can be secured even if the film is greatly underexposed. The knowledge came to us when processing footage shot indoors in a church where illumination was practically nil, insofar as photography was concerned.

Transportation for the cameraman and assistant to and from scenes of spot news events is something that requires attention early in the organization of a newsreel unit. Both must be ever ready to use whatever transportation is available—company or private car, plane, truck or even a motorcycle. Another important thing is to establish early identification with your local police department. Official press cards, where such are issued, usually suffice. For getting in and out of police lines, a police pass sticker or press card for the windshield of your car will make covering assignments easier in town and out.

Amateur movie makers are always interested in knowing whether film of timely subjects photographed by them can be used on television. If it was shot at 24 fps, exposed properly, and embraces an important event not already covered by the station's staff cameraman, it might find ready acceptance. Where such footage is secured, the procedure is to telephone the news editor of the local TV station and describe what you have. If you made notes, either at time of shooting or after, of such pertinent data as time of event, cause—the usual "who, what, where and when" information—your film becomes all the more valuable to the television station; and if footage description and notes sound interesting, a sale of same is likely to result.

Such film production as we have described here is still in its infancy. As time goes on, there will be improvements in both methods and equipment. And of course, the big factor for the future is color which, while not altering the procedure appreciably, will undoubtedly expand further the use of newsreels on television.

THE NEW ARRIFLEX 16MM CAMERA

(*Continued from Page 309*)

designed that light cannot reach the film through either of the two lenses not in taking position. Use of lens caps for this purpose is therefore eliminated. Lens equipment is a matter of choice of the buyer at time of purchasing the camera.

Initial models of the Arriflex 16 take standard hundred-foot and fifty-foot daylight loading spools of film; however, in view of the need in this country for greater film capacity in 16mm cameras for commercial film production, plans of the manufacturer, Arnold & Richter, Munich, call for providing 200 and 400 foot external film magazines as accessory equipment for the cameras to be distributed in the United States.

In the camera's film transport system, two separate octagonal sprockets control the movement of film, which is held against both the feed and takeup sprockets by means of lock guides. These can be held open to facilitate threading.

The film gate is extra long and incorporates a stainless steel pressure plate and spring-cushioned side pressure rails. Gate can be opened all the way for easy threading and cleaning. The pulldown claw is so constructed that it engages film perforations from the front, i.e., from the lens side. This feature greatly facilitates loading operations. The unique claw position, incidentally, was largely responsible for permitting the increased shutter opening of 180°. A registration claw, operating in conjunction with the pulldown claw, insures rock-steady film placement in the gate during exposure and critical registration for double exposure work. The tips of both claws are made of hardened steel.

The electric motor which drives the Arriflex 16 is interchangeable. It slips easily into position in the rear of the camera housing and forms a unit with the rheostat. This position was chosen by the designer to permit use of the camera on a tripod or other flat support. (A special grip handle can be supplied with the camera for handheld use.) Standard motor equipment is an 8-volt DC unit with forward and reverse switch, its capacity at 24 fps is approximately 20 watts. Speeds from 8 to 48 fps can be obtained by adjusting the rheostat. This is determined by the built-in tachometer, which is located at rear of camera in plain view of the operator. For

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An important feature of the camera is the forward or reverse run movement, which permits any length of film to be wound back in the camera by the motor, thus excluding the need for a hand crank for this purpose. This operation is controlled by a knurled disc switch, located behind the motor rheostat. A framing knob, extending from the motor, facilitates turning the camera mechanism by hand for threading and opening the shutter for viewing through the finder when camera is not in actual operation.

Separate frame and footage counters, with dials located handily at rear of camera housing, indicate the amount of footage or frames *used*. Both counters may readily be set at zero through finger-tip controls.

Two important accessories are the lens shade and the carrying case. To facilitate specialized filming, such as trick double exposures, etc., a special combination lens-shade-matt-box and filter holder has been designed for this camera. Design is such that there is no interference with lens turret or lenses. The sturdy carrying case is an important item, providing as it does the ideal place for storage and transportation of the Arriflex 16, plus extra lenses, supply of film, filters and other small accessories. Tropic-proof and of otherwise sturdy construction, exterior finish is hammered aluminum.

The distributor hopes to have initial shipment of Arriflex 16 cameras on hand for demonstration and sale before the end of August.

TELEVISION FILM PRODUCTION

(*Continued from Page 313*)

present TV broadcasting and save the color print for day when color television bows.

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When Color TV comes into its own, it will find no dearth of color film processes for producing suitable color films for transmission. *Tele-Tech,* industry trade paper, in a recent issue, points out that there are at present six color film processes, most of which are already in use. These are Technicolor, Supercinecolor, Trucolor, Ansco Color, and Eastman Kodak's Tru Art Color. The latter is the newest in that it employs for the first time, to any degree, a color negative which is used in making release prints.

WHAT'S NEW

(*Continued from Page 302*)

completely self-contained automatic film developing machine. Straight 16mm models at speeds of 15 to 30 feet per minute are now in production, and combination 16/35mm models at lower speeds also are available. Overall size is 6 ft. long, 2 ft. high and 2 ft. wide. Net weight is 250 pounds. Unit is said to be ideal for processing spot TV newsreels. Further details may be had by writing the manufacturer at 602 West 52nd St., New York 19, N. Y.

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OPTICAL BENCH—Grover Photo Products, 2753 El Roble Dr., Los Angeles 41, Calif., offer an optical bench for camera repairmen and others whose work involves optics. A limited quantity has been made up for immediate delivery. Prices range from $250.00 to $550.00 each, depending upon selection of accessories. Further data may be had by writing manufacturer.

BULLETIN BOARD

(*Continued from Page 298*)

John Boyle, A.S.C., along with G. Carleton Hunt, Fred L. Metzler, Maurice Ransford, Dore Schary, Lou Smith, Jerry Wald, and Charles Brackett comprise a committee appointed recently by the Academy as the planning group for the Academy's forthcoming 24th Annual Awards presentation.

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A. J. Hill, at the June meeting of the American Society of Cinematographers, exhibited the new resolution charts which have been developed by the Motion Picture Research Council, Hollywood, to assist in the testing of motion picture camera lenses. A descriptive article on the function of these charts is scheduled for an early issue of American Cinematographer.

NEWEST PLOT *in the world...*

Boy meets girl is one of the oldest plots in the world. Yet in the hands of today's writers, directors, and technicians it is the newest—sparkling, ever fresh.

Great credit is due these men—their imagination and their skill in the use of modern equipment and materials.

The Eastman Kodak Company is proud of the part it has been able to play. Through the Eastman Technical Service for Motion Picture Film, it helps studios in the selection, exposure, and processing of black-and-white and color film; helps laboratories in setting up control systems and to establish new standards of quality and economy; helps exchanges and exhibitors—always making sure that each foot of film produces optimum results, gets its best showing.

In carrying out this work, the Eastman Kodak Company maintains branches at strategic centers, invites inquiries from all concerned. Address:

Motion Picture Film Department

EASTMAN KODAK COMPANY, ROCHESTER 4, N. Y.

East Coast Division
342 Madison Avenue
New York 17, New York

Midwest Division
137 North Wabash Avenue
Chicago 2, Illinois

West Coast Division
6706 Santa Monica Blvd.
Hollywood 38, California

Talking about Movies

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. . . your basic tool is your camera. Choose it carefully!

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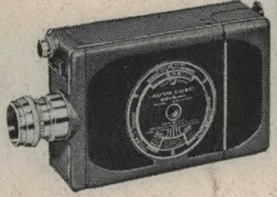
A movie camera, however simple it is to operate, is *not* a simple instrument. A camera must move film —stop it—expose it—move it on and repeat the whole process anywhere between 8 and 64 times *every second.* To build a camera that will perform these complex operations perfectly requires painstaking design, the most conscientious workmanship.

In other words, *quality* is the first thing to look for in choosing your camera. And the best place to find camera quality is in these 16mm magazine-loading Bell & Howells.

Here are some specific features that will help you make better, more ambitious films.

Guaranteed for life. During life of the product, any defect in workmanship or material will be remedied free.



B&H Auto Load...

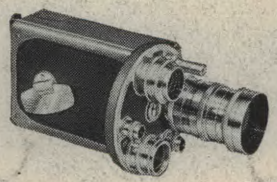
16mm magazine loading camera with 1 inch f/2.5 Filmocoted lens, $189.95

Simple magazine loading enables you to slip film in quickly . . . interchange in mid-reel without fogging a single frame.

Five operating speeds . . . you can shoot from a car, slow down sport scenes, prepare for adding sound. Speeds are *precisely* calibrated at 16 (normal), 24 (sound), 32, 48 and 64 (slow motion) frames per second.

Built-in exposure guide provides a help for making correct exposures. Comes in mighty handy when you've forgotten your light meter or are simply in a hurry to start shooting!

Positive Viewfinder always shows you exactly what you'll get on the screen. It eliminates "amputating"—cutting off a vital part of the scene.



B&H Auto Master

16mm magazine loading turret camera with 1 inch f/2.5 lens only, $249.95

3-lens Auto Master Turret gives you instantaneous choice of lenses. With the viewfinder objective rotating into position with each lens, you're ready to shoot with any lens instantly. You'll use the turret to add variety to *all* of your films!

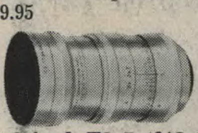
(The *Auto Master* has all of the features of the *Auto Load.*)

Starting a lens family of your own . . .

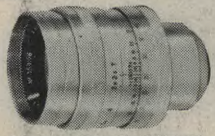
.7 inch T2.7 (f/2.5)
Extremely Wide Angle View — accentuates distance. $89.95

1 inch f/1.4
Gives perspective of human eye—extremely fast. $179.95

2 inch T1.6 (f/1.4)
Medium telephoto—perfect for indoor telephoto work. $179.95



2.8 inch T2.5 (f/2.3)
Telephoto—T stopped for exact light measurement. $182.50

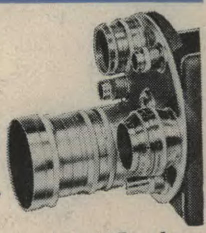


4 inch T2.5 (f/2.3)
Powerful Telephoto—for use under adverse lighting. $209.95

You choose a lens for what it does . . . wide angle, telephoto, or perhaps a lens that is simply fast. BUT—don't assume just *any* lens will perform its primary function, which is to transmit to the film a clear, well defined image, with the color values just right. And the quality of every member of this lens family is second to none in the 16mm field.

Prices subject to change without notice

Give your
Auto Load
a 3 lens turret...



at this new low price. Now your Auto Load can have all the versatility offered by the Auto Master 3 lens turret, and for only $59.95! This special price includes installation but not extra lenses. Price returns to $75 September 1, 1951. See your authorized Bell and Howell dealer today.

You buy for life when you buy

Bell & Howell